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समाचार पत्रों से चयित अंश
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रक्षा विज्ञान पुस्तकालय
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Press Information Bureau
Government of India

Ministry of Defence

Thu, 08 July 2021 7:07PM

DRDO & AICTE launch regular M. Tech. Program in defence technology

A regular M.Tech. Program in Defence Technology has been launched by Defence Research and Development Organisation (DRDO) and All India Council for Technical Education (AICTE) to impart necessary theoretical & experimental knowledge, skill and aptitude in various defence technology areas. Secretary Department of Defence R&D & Chairman DRDO Dr G Satheesh Reddy and Chairman AICTE Prof Anil D Sahasrabudhe launched the program during a virtual event organised by AICTE, New Delhi on July 08, 2021. The program will motivate the aspiring engineers to start their career in defence technology.

This M.Tech. Defence Technology program can be conducted at any AICTE affiliated Institutes/Universities, IITs, NITs or private engineering institutes. Institute of Defence Scientists & Technologists (IDST) will provide support to the institutes for conducting this program, which can be conducted in online as well as offline formats. The program has six specialized streams - Combat Technology, Aero Technology, Naval Technology, Communication Systems & Sensors, Directed Energy Technology and High Energy Materials Technology. The students will also be provided opportunities to conduct their main thesis work in DRDO laboratories, Defence PSUs &

Industries. The program will be helpful to students seeking opportunities in ever expanding defence research and manufacturing sector.

Raksha Mantri Shri Rajnath Singh has congratulated DRDO, AICTE & Industries for starting a Post Graduate Program in Defence Technology. He said the program will help in achieving 'Aatma Nirbhar Bharat'envisionedby Prime Minister Shri Narendra Modi.

In his address, Dr G Satheesh Reddy congratulated DRDO, AICTE and industries for evolving the PG program. He expressed hope that such a specialised program will enable the creation of a large pool of talented workforce for defence sector. He called upon the industry leaders to extend their support for this program and offer opportunities to the students.

Prof Anil D Sahasrabudhe expressed happiness over the launch of the program and said it will not only generate skilled manpower pool in defence technology, but will also create spin-off benefits in terms of new defence startups and entrepreneurs. He emphasized that research should be connected with day-to-day life as it is fundamental for human psyche.

Chairman & Managing Director, Bharat Forge Limited Shri Babasaheb Neelkanth Kalyani congratulated DRDO and AICTE for initiating this program and highlighted its importance for creation of talent pool for defence technology with know-how and know-why capability to fulfil the vision of 'AatmaNirbhar Bharat'.

https://pib.gov.in/PressReleasePage.aspx?PRID=1733818

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 08 July 2021 7:07PM

डीआरडीओ और एआईसीटीई ने रक्षा प्रौद्योगिकी में नियमित मास्टर ऑफ टेक्नोलॉजी कार्यक्रम शुरू किया

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) और अखिल भारतीय तकनीकी शिक्षा परिषद (एआईसीटीई) द्वारा विभिन्न रक्षा प्रौद्योगिकी क्षेत्रों में आवश्यक सैद्धांतिक और प्रायोगिक ज्ञान, कौशल और योग्यता प्रदान करने के लिए रक्षा प्रौद्योगिकी में एक नियमित एम. टेक कार्यक्रम शुरू किया गया है। रक्षा अनुसंधान एवं विकास विभाग के सचिव और डीआरडीओ केअध्यक्ष डॉ जी सतीश रेड्डी और एआईसीटीई के अध्यक्ष प्रो अनिल डी सहस्त्रबुद्धे ने दिनांक 08 जुलाई, 2021 को एआईसीटीई, नई दिल्ली द्वारा आयोजित एक आभासी कार्यक्रम के दौरान इस कार्यक्रम का शुभारंभ किया। यह कार्यक्रम इच्छुक इंजीनियरों को रक्षा प्रौद्योगिकी में अपना करियर शुरूकरने के लिए प्रेरित करेगा।

यह एम टेक रक्षा प्रौद्योगिकी कार्यक्रम एआईसीटीई से संबद्ध संस्थानों/विश्वविद्यालयों, आईआईटी, एनआईटी या निजी इंजीनियरिंग संस्थानों में आयोजित किया जा सकता है। रक्षा वैज्ञानिक और प्रौद्योगिकी विद संस्थान (आईडीएसटी) इस कार्यक्रम के संचालन के लिए संस्थानों को सहायता प्रदान करेगा, जिसे ऑनलाइन और ऑफलाइन प्रारूपों में आयोजित किया जा सकता है।

इस कार्यक्रम में छह विशेष विषय हैं- कॉम्बैट टेक्नोलॉजी, एयरो टेक्नोलॉजी, नेवल टेक्नोलॉजी, कम्युनिकेशन सिस्टम्स एंड सेंसर्स, डायरेक्टेड एनर्जी टेक्नोलॉजी और हाई एनर्जी मैटेरियल टेक्नोलॉजी। छात्रोंको डीआरडीओ प्रयोगशालाओं, रक्षा सार्वजनिक क्षेत्र के उपक्रमों और उद्योगों में अपने मुख्य थीसिस

कार्य को संचालित करने के अवसर भी प्रदान किए जाएंगे। यह कार्यक्रम रक्षा अनुसंधान और विनिर्माण क्षेत्र के विस्तारमें अवसरों की मांग करने वाले छात्रों के लिए मददगार होगा।

रक्षा मंत्री श्री राजनाथ सिंह ने रक्षा प्रौद्योगिकी में स्नातकोत्तर कार्यक्रम शुरू करने के लिए डीआरडीओ, एआईसीटीई और उद्योगों को बधाई दी है। उन्होंने कहा कि इस कार्यक्रम से प्रधानमंत्री श्री नरेन्द्र मोदी द्वारा प्रदान 'आत्मनिर्भर भारत' का दृष्टिकोण साकार करने में मदद मिलेगी।

डॉ जी सतीश रेड्डी ने अपने संबोधन में डीआरडीओ, एआईसीटीई और उद्योगों को पीजी कार्यक्रम विकसित करने के लिए बधाई दी । उन्होंने आशा व्यक्त की कि इस तरह के विशेष कार्यक्रम से रक्षा क्षेत्र के लिए प्रतिभाशाली कार्यबल का एक बड़ा पूल तैयार किया जा सकेगा । उन्होंने उद्योग जगत के नेताओं से इस कार्यक्रम के लिए अपना साथ देने और छात्रों को अवसर प्रदान करने का आह्वान किया ।

प्रो अनिल डी सहस्त्रबुद्धे ने कार्यक्रम के शुभारंभ पर खुशी व्यक्त करते हुए कहा कि इससे न केवल रक्षा प्रौद्योगिकी में कुशल जन शक्तितैयार होगी, बल्कि नए रक्षा स्टार्टअप और उद्यमियों के मामले में अनपेक्षित लाभ भी पैदा होंगे। उन्होंने जोर देकर कहा कि शोध को दिन-प्रतिदिन के जीवन से जोड़ा जाना चाहिए क्योंकि यह मानवीय मनोविज्ञान का मूल है।

भारत फोर्ज लिमिटेड के अध्यक्ष एवं प्रबंध निदेशक श्री बाबा साहेब नीलकंठ कल्याणी ने डीआरडीओ और एआईसीटीई को इस कार्यक्रम की शुरुआत करने के लिए बधाई दी और रक्षा प्रौद्योगिकी के लिए प्रतिभा पूल के निर्माण के लिए इसके महत्व पर प्रकाश डाला और यह बताया कि यह कार्यक्रम किस प्रकार आत्मनिर्भर भारत के दृष्टिकोण को साकार कर पाएगा।

https://pib.gov.in/PressReleasePage.aspx?PRID=1733942

Hindustan Times

Fri, 09 July 2021

AICTE, DRDO launch M.Tech in Defence Technology

All India Council for Technical Education (AICTE) and Defence Research and Development Organisation (DRDO) has launched M.Tech. Program in Defence Technology on July 8

By Edited by Maitree Baral

All India Council for Technical Education (AICTE) and Defence Research and Development Organisation (DRDO) has launched M.Tech. Program in Defence Technology on July 8. Institute of Defence Scientists & Technologists (IDST) will provide support to AICTE affiliated Institutes/Universities, IITs, NITs and private engineering institutes to conduct this program in online and offline format.

AICTE, DRDO launch M.Tech in Defence Technology(HT photo)

Congratulating both the institutes for this new program, Defence Minister Rajnath Singh said, "the program will help in achieving 'AatmaNirbhar Bharat'envisioned by Prime Minister Narendra Modi."

The program will have six specialized streams - Combat Technology, Aero Technology, Naval Technology, Communication Systems & Sensors, Directed Energy Technology and High Energy Materials Technology.

The students will also be provided opportunities to conduct their main thesis work in DRDO laboratories, Defence PSUs and Industries.

In his address, Dr G Satheesh Reddy, Chairman DRDO congratulated DRDO, AICTE and industries for evolving the PG program. He expressed hope that such a specialised program will enable the creation of a large pool of talented workforce for defence sector. He called upon the industry leaders to extend their support for this program and offer opportunities to the students.

Prof Anil D Sahasrabudhe, Chairman AICTE, expressed happiness over the launch of the program and said it will not only generate skilled manpower pool in defence technology, but will also create spin-off benefits in terms of new defence startups and entrepreneurs. He emphasized that research should be connected with day-to-day life as it is fundamental for human psyche.

https://www.hindustantimes.com/education/news/aicte-drdo-launch-m-tech-in-defence-technology-101625752762418.html

अमर उजाला

Fri, 09 July 2021

बड़ा कदम: एआईसीटीई रक्षा प्रौद्योगिकी में शुरू करेगा एमटेक प्रोग्राम, इन छह विषयों में मिलेगी विशेषज्ञता

सार

डीआरडीओ ने एआईसीटीई के सहयोग से छह विषयों में एमटेक इन डिफेंस टेक्नोलॉजी पाठ्यक्रम की शुरुआत करने जा रहा है।

विस्तार

अखिल भारतीय तकनीकी शिक्षा परिषद (एआईसीटीई) 8 जुलाई को वर्चुअल मोड के जरिए रक्षा प्रौद्योगिकी में एमटेक कार्यक्रम शुरू करने जा रहा है। स्नातकोत्तर पाठ्यक्रम के जरिए अभ्यर्थी व्हीकल इंजीनियरिंग, एरोस्पेस टेक्नोलॉजी, कम्यूनिकेशन सिस्टम एंड सेंसर, डारेक्टेड एनर्जी टेक्नोलॉजी, नवल टेक्नोलॉजी और हाई एनर्जी मटेरियलर्स टेक्नोलॉजी में विशेषज्ञता हासिल कर सकते हैं। एआईसीटीई के अध्यक्ष अनिल डी सहस्रबुद्धे, सचिव डीडीआरएंडडी और अध्यक्ष डीआरडीओ जी. सतीश रेड्डी गुरुवार को कार्यक्रम का शुभारंभ करेंगे।

डिफेंस में रूचि पैदा करने के लिए शुरू किया पाठ्यक्रम

डीआरडीओ ने एआईसीटीई के सहयोग से 6 विशिष्ट धाराओं में एमटेक और बीटेक (वैकल्पिक पाठ्यक्रम) पाठ्यक्रम की शुरुआत की है। एमटेक पाठ्यक्रम छात्रों में रुचि पैदा करेंगे और उन्हें रक्षा, सार्वजनिक उपक्रमों और निजी रक्षा उद्योगों में शामिल होने के लिए रक्षा और सुरक्षा के लिए अनुसंधान और विकास में अपना करियर बनाने के लिए प्रेरित करेगा।

यहां मिल सकते हैं नौकरी के अवसर

रक्षा प्रौद्योगिकी में पाठ्यक्रम शुरू करने के पीछा का उद्देश्य रक्षा प्रौद्योगिकियों और प्रणालियों में आवश्यक सैद्धांतिक और प्रयोगात्मक ज्ञान, कौशल और योग्यता वाले अभ्यर्थियों को तैयार करना है। बता दें कि इन पाठ्यक्रमों में स्नातकोत्तर करने वाले अभ्यर्थियों को राष्ट्रीय व अंतरराष्ट्रीय स्तर पर विभिन्न रक्षा प्रयोगशालाओं, रक्षा सार्वजनिक क्षेत्र व निजी उद्योगों, आयुध कारखानों और अर्थव्यवस्था के अन्य समान क्षेत्रों में नौकरी मिल सकती है।

https://www.amarujala.com/education/aicte-to-launch-mtech-course-in-defence-technology-together-with-drdo?pageId=2

Business Standard

Fri, 09 July 2021

Bharat Dynamics Ltd signs Rs 499-crore deal with IAF for Akash missiles

Bharat Dynamics Limited signed a contract worth about Rs 499 crore with the Ministry of Defence for the manufacture and supply of Akash missiles to the Indian Air Force

Bharat Dynamics Limited (BDL) on Thursday signed a contract worth about Rs 499 crore with the Ministry of Defence for the manufacture and supply of Akash missiles to the Indian Air Force (IAF).

Attendees stand in front of Bharat Dynamics Ltd Akash Weapon System, manufactured by the DRDO, during the Aero India air show. Photo: Bloomberg

According to a press release, the contract was signed by Air Commodore Ajay Singhal, Air Commodore, Guided Weapons Maintenance on behalf of Indian Air Force and Commodore T N Kaul (Retd), Executive Director (Marketing) on behalf of BDL in the presence of Radhakrishna, Director (Production), BDL at New Delhi today.

CMD, BDL Commodore Siddharth Mishra (Retd) stated that BDL is supplying Akash Missiles to the Indian Army and Indian Air Force. With the announcement from the Union Cabinet regarding clearance of Akash Weapon System for Export, the Company is exploring offering Akash for export to foreign countries. BDL has already received export leads from some countries expressing interest in procuring the Missile. The Company has a well-established infrastructure and expertise to execute these orders and meet the customer delivery schedule.

BDL is the prime production agency for projects under India's Integrated Guided Missile Development Programme (IGMDP). Akash is one of the missiles under IGMDP being manufactured by BDL, both for the Indian Army and the Indian Air Force. The Missile has been successfully test-fired on several occasions and is regarded as one of the best missiles in its category.

The Company also manufactures Anti-Tank Guided Missiles, Air to Air Missiles, Air to Surface Weapons, Launchers, Test Equipment, Underwater weapons, and Counter Measure Systems.

The Company has bagged new orders worth about Rs 2803 Crore (including taxes) during the FY 2020-21 which includes Anti - Tank Guided Missiles order worth about Rs 1820 Crore and Surface to Air Missiles order worth about Rs 793 Crore.

With the present contract signed for the supply of Akash to the Indian Air Force, the order book position now stands at about Rs 8683 Crore.

The company is also aiming to expand its footprints in the international market by offering Air Missiles, Anti-Tank Guided missiles, underwater weapons, and Counter Measure Systems in addition to Akash Missiles to friendly countries.

(Only the headline and picture of this report may have been reworked by the Business Standard staff; the rest of the content is auto-generated from a syndicated feed.)

https://www.business-standard.com/article/companies/bharat-dynamics-ltd-signs-rs-499-crore-deal-with-iaf-for-akash-missiles-121070900076_1.html

Business Standard

Fri, 09 July 2021

Bharat Dynamics signs contract for supply of Akash Missiles to IAF

Bharat Dynamics (BDL) has signed a contract worth about Rs.499 crore with Ministry of Defence for manufacture and supply of Akash Missiles to the Indian Air Force.

The company has bagged new orders worth about Rs.2803 crore (including taxes) during the FY 2020-21 which includes Anti - Tank Guided Missiles order worth about Rs.1820 crore and Surface to Air Missiles order worth about Rs.793 crore.

With the present contract signed for supply of Akash to Indian Air Force, the order book position now stands at about Rs.8683 crore.

The company is also aiming to expand its footprints in the international market by offering Air to Air Missiles, Anti-Tank Guided missiles, underwater weapons and Counter Measure Systems in addition to Akash Missiles to friendly countries.

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The announcement was made after market hours yesterday, 8 July 2021. Shares of Bharat Dynamics fell 0.03% to settle at Rs 372.70 yesterday.

Bharat Dynamics manufactures defense equipment. The company offers ammunitions, counter measures dispensing, infra-red interference indicators, and missile systems. It serves military and aerospace industries in India.

(This story has not been edited by Business Standard staff and is auto-generated from a syndicated feed.)

https://www.business-standard.com/article/news-cm/bharat-dynamics-signs-contract-for-supply-of-akash-missiles-to-iaf-121070900170_1.html

जागरण

Fri, 09 July 2021

आकाश मिसाइलों के लिए भारतीय वायुसेना के साथ BDL ने 499 करोड़ रुपये के सौदे पर हस्ताक्षर किए

भारत डायनेमिक्स लिमिटेड (BDL) ने भारतीय वायुसेना (IAF) के लिए आकाश मिसाइलों के निर्माण और आपूर्ति के लिए रक्षा मंत्रालय के साथ लगभग 499 करोड़ रुपये के अनुबंध पर हस्ताक्षर किए। भारतीय सेना और वायुसेन के लिए आकाश आइजीएमडीपी के तहत बीडीएल द्वारा निर्मित मिसाइलों में से एक है।

By Tanisk

नई दिल्ली: भारत डायनेमिक्स लिमिटेड (BDL) **ने गुरुवार को भारतीय वायु सेना** (IAF) **के लिए आकाश मिसाइलों के निर्माण और आपूर्ति के लिए रक्षा मंत्रालय के साथ लगभग** 499 **करोड़ रुपये के अनुबंध पर हस्ताक्षर किए। एक प्रेस विज्ञप्ति के अनुसार नई दिल्ली में भारतीय वायुसेना की ओर से एयर कमोडोर, गाइडेड वेपंस मेंटेनेंस अजय सिंघल और बीडीएल के कार्यकारी निदेशक (मार्केटिंग) कमोडोर टीएन कौल (सेवानिवृत्त) के बीच इस अनुबंध पर हस्ताक्षर हुआ। इस दौरान बीडीएल के निदेशक (उत्पादन) पी राधाकृष्ण की मौजूद रहे।**

बीडीएल के सीएमडी कमोडोर सिद्धार्थ मिश्रा (सेवानिवृत्त) ने कहा कि बीडीएल भारतीय सेना और भारतीय वायु सेना को आकाश मिसाइलों की आपूर्ति कर रहा है। निर्यात के लिए आकाश वेपन सिस्टम की मंजूरी के संबंध में केंद्रीय मंत्रिमंडल की घोषणा के साथ कंपनी विदेशों में निर्यात के लिए आकाश की पेशकश करने पर विचार कर रही है।

बीडीएल को मिसाइल की खरीद में रुचि व्यक्त करने वाले कुछ देशों से पहले ही निर्यात लीड प्राप्त हो चुकी है। इनके ऑर्डर और डिलिवरी को पूरा करने के लिए कंपनी के पास एक अच्छी तरह से स्थापित बुनियादी ढांचा और विशेषज्ञता है। बीडीएल भारत के एकीकृत निर्देशित मिसाइल विकास कार्यक्रम (IGMDP) **के तहत परियोजनाओं के लिए प्रमुख उत्पादन एजेंसी है। भारतीय सेना और भारतीय वायु सेना दोनों के लिए आकाश आइजीएमडीपी के तहत बीडीएल द्वारा निर्मित मिसाइलों में से एक है। इस मिसाइल का कई मौकों पर सफलतापूर्वक परीक्षण किया गया है। इसे अपनी श्रेणी में सर्वश्रेष्ठ मिसाइलों में से एक माना जाता है।**

कंपनी टैंक रोधी निर्देशित मिसाइल, हवा से हवा में मार करने वाली मिसाइल, हवा से सतह पर मार करने वाला हथियार, लॉन्चर, परीक्षण उपकरण, अंडर वाटर वेपन और काउंटर मेजर सिस्टम भी बनाती है। कंपनी को वित्त वर्ष 2020-21 **के दौरान लगभग** 2803 **करोड़ रुपये** (कर सहित) **के नए ऑर्डर मिले हैं। इसमें लगभग** 1820 **करोड़ रुपये के एंटी-टैंक गाइडेड मिसाइल के ऑर्डर और लगभग** 793 **करोड़ रुपये के सरफेस टू एयर मिसाइल ऑर्डर शामिल हैं। भारतीय वायु सेना को आकाश की आपूर्ति के लिए हस्ताक्षरित वर्तमान अनुबंध के साथ, ऑर्डर बुक की स्थिति अब लगभग** 8683 **करोड़ रुपये है।**

https://www.jagran.com/news/national-bdl-signs-deal-with-iaf-rs-499-crore-for-akash-missiles-21814143.html

Fri, 09 July 2021

India's anti-drone technology: How to neutralise any future drone attacks

By Mayank Mohanti

Highlights

- ***The first process in countering a possible drone attack is to implement a monitoring equipment which would not only detect and distinguish drones from other objects such as birds and airplanes***
- ***The Defence Research and Development Organisation (DRDO) has said that its D-4 drone system could help the Army swiftly detect and destroy drones that pose a security threat***
- ***DRDO's Counter-Drone System was deployed at the PM's Independence Day speech last year and for VVIP protection at the Republic Day parades in 2020 and 2021, but the technology is yet to go into mass production***
- ***Another measure includes sending out a friendly unmanned aircraft dragging an actual net to capture the enemy UAS, such as the NINJA system, or Negation of Improvised Non-state Joint Aerial-threats***

The Indian Air Force (IAF) base in Jammu was rocked by two IED blasts in the early hours of June 27, when two drones dropped high grade-explosives that damaged the roof of a building and injured two IAF personnel.

This is being dubbed as the first drone-based terror attack ever launched on India and signals towards an ominous future, where Unmanned Aerial Systems (UAS), autonomous weapons systems and robotic soldiers would be employed as new modes of sabotage and violence.

It's been long time coming

But for many, this attack wasn't very surprising. For one, terrorists from across the border have been dropping weapons and ammunition the country since the last three years; in fact, in June last year, the Border Security Forces (BSF) neutralised a hexacopter in Jammu which was carrying a US-made M4 semi-automatic carbine, two magazines, 60 rounds of cartridge and seven Chinese grenades as payload. Reports estimate 100-150 annual drone sightings, mostly for surveillance, near India's western border.

The discussions about such terror attacks began in 2018 when Syrian rebels used homemade drones to attack Russian military bases in Syria and Venezuelan President Nicolas Maduro narrowly escaped an assassination attempt by a GPS-guided drone attack the same year. And it further gained momentum in 2019 when Yemen's Houthi rebels claimed responsibility for bombing two key Saudi oil installations.

Drone monitoring technologies

The first process in countering a possible drone attack is to implement a monitoring equipment which would not only detect and distinguish drones from other objects such as birds and airplanes but also identify a particular model of drone and alert security officials to deploy countermeasures.

A radar system can measure the direction and the position of flying objects by sending out radio signals and listening for the echo. But conventional systems are not meant for detecting small flying objects and even if they're calibrated in such a manner, they can easily mistake a bird for

smaller drones. However, a micro-doppler radar can detect speed differences within moving objects, allowing easy identification.

Radio Frequency (RF) Analysers is another such technique that can detect radio communication between a drone and its controller, but it's useless against autonomous drones. Security experts have also looked at optical cameras with infrared or thermal imaging capabilities to capture images of the drone and its payload.

Counter-drone measures

Almost all major countries have introduced counter-drone measures to deal with rogue flying objects but the technologies to disable their navigation, interfere with their radio frequency, or even training eagles for countering small drones haven't really proved foolproof. Therefore, several security agencies use a mix of these technologies, which we've listed below.

Radio Jammer

A radio jammer is a static, mobile, or handheld device that uses a combination of radar and cameras to detect and jam drones in the sky by transmitting radio frequencies. The United States Army uses the Marine Corps-sponsored LMADIS, or Light-Mobile Air Defense Integrated System -- a mobile mounted anti-drone system which destroyed an Iranian drone in July 2019.

GPS Spoofing

This countermeasure involves sending a new signal to the drone, replacing the communication with GPS satellites it uses for navigation. And by dynamically altering the GPS coordinates in real-time, this device can be used to control the drone's position and redirect it to a safe place.

Electromagnetic Pulse (EMP)

Counter-Unmanned Aerial System (C-UAS) solutions fitted with Electromagnetic Pulse (EMP) capability interfere with radio links when fired and disrupt or even destroy the electronic circuits in drones. And because the EMP can also fry other electronic devices within range, these devices may include an antenna to focus the EMP in a certain direction.

Aerospace and defense giant Northrop Grumman uses Epirus, Inc.'s Leonidas EMP solution for both static and mobile counter-drone defense.

Net Guns or drones

Net Cannon fired from the ground can be hand-held, shoulder-launched, or turret-mounted and is used to capture drones effectively between a range of 20m to 300m; they can also be fired from another drone to overcome the limited range.

Another measure includes sending out a friendly unmanned aircraft dragging an actual net to capture the enemy UAS, such as the NINJA system, or Negation of Improvised Non-state Joint Aerial-threats, used by the US Air Force.

High-energy lasers

These are high-powered counter-Unmanned Aerial Systems (c-UAS) that shoot an extremely focused beam of light, or laser beam that melt and disrupt a drone's electronics.

India's anti-drone technology

A drone-based terror attack is quite effective: it reduces operation costs and the risk of identification for terrorists as well as can easily sneak past conventional interventions employed by security agencies. Furthermore, individuals with no affiliation to any terrorist organisations can also carry out such an attack with sufficient motivation and skills and fly under the radar.

Indian border forces are largely dependent on their eyesight to watch out for drones and then shoot them down. But smaller drones operating at heights may be difficult to spot and target. In the wake of threats from drones, the Border Security Forces (BSF) launched an initiative to dig into a pool of 500 Indian companies to stop the menace of drones being used for narco-terrorism and attacks on vital installations.

The Defence Research and Development Organisation (DRDO) has said that its D-4 drone system could help the Army swiftly detect and destroy drones that pose a security threat to the country. The technology, developed in 2019, is capable of destroying micro-drones by jamming the

command and control links (softkill) and further by damaging the hardware of the drones with lasers (hardkill).

The DRDO's Counter-Drone System was deployed at the PM's Independence Day speech last year and for VVIP protection at the Republic Day parades in 2020 and 2021, but the technology is yet to go into mass production.

Which begs the question: why didn't the government heed to those obvious ominous signs and procure DRDO's detect-and-destroy technology for drones? India's attempts to counter Pakistan on the international stage for its support to terror organisations has shown some success, but with shifting warfare and drones taking centre-stage, it's time for India to showcase and strengthen its technological capabilities as well as have a long-term policy for novel technologies.

https://www.indiatimes.com/technology/science-and-future/india-anti-drone-technology-uas-attack-defence-544524.html#highlight_55700

COVID 19: DRDO's Contribution

Hindustan Times

Fri, 09 July 2021

Mankind Pharma gets DRDO's permission to manufacture and market anti-Covid drug 2-DG

Clinical trial data shows that 2-DG accumulates in virus-infected cells, and prevents the growth of the virus, helping in faster recovery of patients hospitalised with Covid-19

By Ayshee Bhaduri, Edited By Avik Roy

New Delhi: Mankind Pharma has received the license from the Defence Research and Development Organisation (DRDO) to manufacture and market oral Covid-19 drug 2-deoxy-D-glucose (2-DG), the company announced on Thursday.

The drug was developed by the Defence Research and Development Establishment (DRDE), Gwalior, and clinical trials were conducted by the Institute of Nuclear Medicine and Allied Sciences (INMAS), a lab of DRDO, in association with Dr Reddy's Laboratories, the ministry of defence had said in a release last month.

Mankind will be manufacturing this drug at its facilities in Visakhapatnam and Himachal Pradesh.

The Drugs Controller General of India had permitted the emergency use of 2-DG as an adjunct treatment for moderate to severe Covid-19 infections(AFP)

According to the government release, clinical trial data shows that the drug accumulates in virus-infected cells, and prevents the growth of the virus, helping in faster recovery of patients hospitalised with Covid-19, and reducing their dependence on supplemental oxygen. The anti-Covid drug from DRDO reduces the virus multiplication and alleviates cells from infection-induced cytopathic effect and cell death, the study conducted in June had found.

Being a generic molecule and an analogue of glucose means 2-DG can be easily manufactured and made available in large quantities, the release added.

The Drugs Controller General of India (DCGI) had permitted the emergency use of 2-DG as an adjunct treatment for moderate to severe Covid-19 infections on May 1, Mankind Pharma told news agency PTI. "Our objective behind this agreement is to ensure maximum reach of this

medication to the deserving Indian patients suffering from the deadly pandemic," the company said.

Government officials had announced that the market price of 2-DG will be fixed at ₹900 per sachet, and sold by the Hyderabad-based Dr. Reddy's Laboratories. DRDO would provide the drug for free to central and state governments

https://www.hindustantimes.com/india-news/mankind-pharma-gets-drdo-s-permission-to-manufacture-and-market-anti-covid-drug-2dg-101625745390081.html

ThePrint

Fri, 09 July 2021

Mankind Pharma receives DRDO license to manufacture, market Covid drug 2-DG

Drugs Controller General of India (DCGI) had permitted the emergency use of 2-DG on 1 May, as an adjunct treatment for moderate to severe Covid-19 patients.

New Delhi: Drug firm Mankind Pharma on Thursday said it has received licence from the Defence Research and Development Organisation (DRDO) to manufacture and market oral 2-deoxy-D-glucose (2-DG), used for the treatment of COVID-19.

2-DG was developed by the Defence Research and Development Establishment (DRDE), Gwalior. The clinical trials were conducted by the Institute of Nuclear Medicine and Allied Sciences (INMAS), a lab of DRDO, in association with Dr Reddy's Laboratories, Mankind Pharma said in a statement.

The company will manufacture the product at its facilities in Visakhapatnam and Himachal Pradesh, it added.

The office of the Drugs Controller General of India (DCGI) on May 1 had permitted the emergency use of 2-DG as an adjunct treatment for moderate to severe COVID-19 patients, Mankind Pharma said.

The drug is found to help the hospitalised COVID-19 patients recover faster and is also known to reduce the supplemental oxygen dependency among the COVID-19 patients, it added.

"Our objective behind this agreement is to ensure maximum reach of this medication to the deserving Indian patients suffering from the deadly pandemic," the company said.

https://theprint.in/health/mankind-pharma-receives-drdo-license-to-manufacture-market-covid-drug-2-dg/692418/

हिन्दुस्तान

Fri, 09 July 2021

इस दवा के उत्पादन में अब आएगी तेजी, कोरोना से लड़ाई में बनेगी मददगार

मैनकाइंड फार्मा को कोरोना वैक्सीन बनाने के लिए डीआरडीओ से लाइसेंस मिल गया है। कंपनी ने गुरुवार को इस बारे में घोषणा की। इसके बाद कंपनी अब 2-डीजी नाम की दवा बनाने और बेचने के लिए अधिकृत होगी। गौरतलब है कि 2-डीजी दवा को डिफेंस रिसर्च डेवलपमेंट स्टैब्लिशमेंट डीआरडीई ग्वालियर ने डेवलप किया था। पिछले महीने रक्षा मंत्रालय द्वारा पिछले महीने जारी विज्ञप्ति के मुताबिक इसका क्लिनिकल ट्रायल डॉ. रेड्डी के सहयोग से डीआरडीओ की लैब आईएनएमएस में किया गया है।

मैनकाइंड इस दवा का निर्माण अपने विशाखापत्तनम और हिमाचल प्रदेश स्थित फैक्ट्रियों में करेगी। यह दवा वायरस से प्रभावित सेल्स पर असर डालती है और वायरस की बढ़त को रोकती है। इससे कोरोना के मरीज को जल्द ठीक होने में मदद मिलती है और उसकी आक्सीजन पर निर्भरता कम होती है। सरकारी समाचार विज्ञप्ति के मुताबिक क्लिनिकल ट्रायल में मिले आंकड़ों से यह बात बात साबित होती है। जून में हुई स्टडी में पाया गया है कि डीआरडीओ की यह दवा वायरस की संख्यावृद्धि पर भी रोक लगाती है।

चूंकि यह दवा जेनेरिक मॉलीक्यूल और ग्लूकोज का मिश्रण है, इसलिए इसका आसानी से और बड़ी मात्रा में उत्पादन हो सकता है। ड्रग कंट्रोलर जनरल आफ इंडिया ने कोविड 19 आंशिक या गंभीर इंफेक्शन के दौरान 2-डीजी दवा के इस्तेमाल की इजाजत एक मई को ही दे दी थी। मैनकाइंड फार्मा के मुताबिक इस एग्रीमेंट का हमारा उद्देश्य इस महामारी से जूझ रहे तमाम भारतीयों तक दवा को पहुंचाना है। सरकारी अधिकारियों ने इस दवा के एक सैशे की कीमत 900 रुपए तय कर रखी है। वहीं 2-डीजी को बेचने का अधिकार हैदराबाद स्थित डॉ. रेड्डी लैबोरेट्रीज के पास है। डीआडीओ केंद्र और राज्य सरकारों को मुफ्त में दवा देगी।

https://www.livehindustan.com/national/story-drdo-approved-medicine-will-be-produced-at-big-leve-will-help-to-fight-corona-4201336.html

inextlive

Fri, 09 July 2021

750 मरीजों होंगे कवर, 15 दिन का बैकअप भी

- *मेडिकल कॉलेज में लिक्विड, मेनीफोल्ड और ऑक्सीजन जनरेशन प्लांट तीनों तरह से मरीजों को होगी ऑक्सीजन की सप्लाई*
- *ऑक्सीजन जनरेशन प्लांट लगाने की कवायद तेज, डीआरडीओ करेगा तैयार*

Meerut: **कोरोना की दूसरी लहर में ऑक्सीजन की मारामारी के बाद शासन सतर्क हो गया है। इसके तहत एलएलआरएम मेडिकल कॉलेज में ऑक्सीजन जनरेशन प्लांट लगाने की तैयारियां शुरू हो गई है। इसके बाद मेडिकल कॉलेज में लिक्विड, मेनीफोल्ड और ऑक्सीजन जनरेशन प्लांट तीनों तरह से मरीजों को ऑक्सीजन की सप्लाई की जा सकेगी।**

750 मरीज होंगे कवर

मेडिकल कॉलेज में लगने वाले नए ऑक्सीजन प्लांट से 750 मरीजों को एक साथ ऑक्सीजन से कवर किया जा सकेगा। इसके अलावा लगभग 15 दिन का बैकअप भी 24 घंटे उपलब्ध हो सकेगा। मेडिकल कॉलेज के प्रिंसिपल डॉ। ज्ञानेंद्र कुमार ने बताया कि ऑक्सीजन जनरेशन प्लांट एम्स में लगे प्लांट की तरह होगा। किसी भी परिस्थिति में ऑक्सीजन की कमी न हो इसी के मद्देनजर शासन ने मेडिकल कॉलेज में अधिक क्षमता वाला प्लांट लगाने का फैसला लिया है।

डीआरडीओ करेगा तैयार

डॉ। ज्ञानेंद्र कुमार ने बताया डीआरडीओ की ओर से ये ऑक्सीजन जनरेशन प्लांट तैयार करवाया जा रहा है। इसके लिए डीआरडीओ की टीम पहले ही अस्पताल की सभी व्यवस्थाओं और संसाधनों का ब्योरा ले चुकी है और निरीक्षण भी किया जा चुका है। मेडिकल कॉलेज में पहले से स्थापित लिक्विड ऑक्सीजन प्लांट के बराबर में ही इस प्लांट को लगाने पर मोहर लग चुकी है।

पीडियाट्रिक आईसीयू में सप्लाई

डीआरडीओ द्वारा तैयार करवाए जा रहे नए ऑक्सीजन जनरेशन प्लांट को पीडियाट्रिक आईसीयू से भी जोड़ा जाएगा। अधिकारियों के मुताबिक जल्द ही ये शुरू हो जाएगा। संभावित तीसरी लहर के बच्चों पर असर डालने की आशंकाओं के बीच नए तैयार हो रहे बच्चा आईसीयू कोविड वार्ड को इससे पूरी तरह से कवर किया जाएगा।

कोरोना की दूसरी लहर के दौरान ऑक्सीजन की कमी की वजह से लोगों को खासी परेशानी झेलनी पड़ी थी। इसी के मद्देनजर अस्पताल में ऑक्सीजन जनरेशन प्लांट शासन की योजना के तहत लगवाया जा रहा है। डॉ. ज्ञानेंद्र कुमार, प्रिंसिपल, मेडिकल कॉलेज

https://www.inextlive.com/uttar-pradesh/meerut/efforts-to-set-up-oxygen-generation-plant-in-medical-college-intensified-298889

DRDO on Twitter

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Thu, 08 July 2021 3:28PM

Shri Ajay Bhatt takes over as Raksha Rajya Mantri

Shri Ajay Bhatt took over as Raksha Rajya Mantri on July 08, 2021. After assuming charge, he called on Raksha Mantri Shri Rajnath Singh at his office in South Block. Defence Secretary Dr Ajay Kumar and other senior officials of Ministry of Defence received Shri Ajay Bhatt and welcomed him into his office. In a tweet, Shri Ajay Bhatt thanked Prime Minister Shri Narendra Modi for giving him the responsibility, saying that he will strive to build the 'AatmaNirbhar Bharat' of the 21st century.

Shri Ajay Bhatt is a Member of Parliament from Nainital-Udhamsingh Nagar constituency, Uttarakhand. He is the member of Standing Committee on Defence; Consultative Committee, Ministry of Health and Family Welfare; Committee on Subordinate Legislation; Joint Committee on the Personal Data Protection Bill 2019 and Committee on Estimates. He had, earlier, served as Cabinet Minister in Uttarakhand government, holding portfolios such as Parliamentary Affairs, Health and Disaster Management. He was also the Leader of Opposition in Uttarakhand Legislative Assembly.

https://pib.gov.in/PressReleasePage.aspx?PRID=1733674

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 08 July 2021 3:28PM

श्री अजय भट्ट ने रक्षा राज्य मंत्री के रूप में पदभार संभाला

श्री अजय भट्ट ने 8 जुलाई, 2021 को रक्षा राज्य मंत्री के रूप में पदभार ग्रहण किया। पदभार ग्रहण करने के बाद, उन्होंने रक्षा मंत्री श्री राजनाथ सिंह से साउथ ब्लॉक में उनके कार्यालय में मुलाकात की। रक्षा सचिव डॉ. अजय कुमार और रक्षा मंत्रालय के अन्य वरिष्ठ अधिकारियों ने श्री अजय भट्ट का उनके कार्यालय में स्वागत किया। एक ट्वीट में, श्री अजय भट्ट ने प्रधानमंत्री श्री नरेन्द्र मोदी को उन्हें यह जिम्मेदारी देने के लिए धन्यवाद देते हुए कहा कि वह 21वीं सदी के 'आत्मनिर्भर भारत' के निर्माण का प्रयास करेंगे।

श्री अजय भट्ट उत्तराखंड के नैनीताल-उधमसिंह नगर निर्वाचन क्षेत्र से सांसद हैं। वह रक्षा स्थायी समिति, स्वास्थ्य और परिवार कल्याण मंत्रालय की सलाहकार समिति, अधीनस्थ विधान पर समिति; व्यक्तिगत डेटा संरक्षण विधेयक 2019 पर संयुक्त समिति और अनुमान समिति के सदस्य हैं। उन्होंने इससे पहले, उत्तराखंड सरकार में कैबिनेट मंत्री के रूप में कार्य किया था और संसदीय मामलों, स्वास्थ्य और आपदा प्रबंधन जैसे विभागों को संभाला था। वह उत्तराखंड विधानसभा में विपक्ष के नेता भी रहे थे।

https://pib.gov.in/PressReleasePage.aspx?PRID=1733846

Press Information Bureau
Government of India

Ministry of Defence

Thu, 08 July 2021 5:12PM

MoD implements web-based integrated system for sanction & disbursement of defence pension

Ministry of Defence has implemented SPARSH [System for Pension Administration (Raksha)], an integrated system for automation of sanction and disbursement of defence pension. This web-based system processes pension claims and credits pension directly into the bank accounts of defence pensioners without relying on any external intermediary. A Pensioner Portal is available for pensioners to view their pension related information, access services and register complaints for redressal of grievances, if any, relating to their pension matters.

SPARSH envisages establishment of Service Centres to provide last mile connectivity to pensioners who may be unable to directly access the SPARSH portal for any reason. In addition to several offices of the Defence Accounts Department, which are already functioning as Service Centres for pensioners, the two largest banks dealing with defence pensioners – State Bank of India (SBI) and Punjab National Bank (PNB) – have been co-opted as Service Centres.

An agreement to this effect was signed between Officiating Controller General of Defence Accounts (CGDA) Shri Rajnish Kumar and officials of SBI & PNB, in the presence of Defence Secretary Dr Ajay Kumar and Financial Advisor (Defence Services) Shri Sanjiv Mittal in New Delhi on July 08, 2021. Under the agreement, the pensioners can approach various branches of these two banks for obtaining any service relating to their pension issues.

Appreciating the efforts of all those involved in this process, the Defence Secretary said implementation of SPARSH fulfilled a long pending requirement. He added that the decision will prove to be a boon for defence pensioners and thanked the officials of SBI & PNB. He urged them to facilitate the migration of manual data and complete the process at the earliest.

https://pib.gov.in/PressReleasePage.aspx?PRID=1733751

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 08 July 2021 5:12PM

रक्षा मंत्रालय ने रक्षा पेंशन की मंजूरी और वितरण के लिए वेब आधारित एकीकृत प्रणाली लागू की

रक्षा मंत्रालय ने रक्षा पेंशन की मंजूरी और वितरण के स्वचालन के लिए एक एकीकृत प्रणाली, स्पर्श [सिस्टम फ़ॉर पेंशन एडमिनिस्ट्रेशन (रक्षा)] लागू की है। यह वेब आधारित प्रणाली पेंशन दावों को आगे बढ़ाती है और किसी बाहरी मध्यस्थ पर निर्भर हुए बिना सीधे रक्षा पेंशनभोगियों के बैंक खातों में जमा करती है। पेंशनभोगियों के लिए एक पेंशनभोगी पोर्टल उपलब्ध है जो पेंशनभोगियों के लिए उनकी पेंशन संबंधी जानकारी, पहुंच सेवाएं देखने और पेंशन मामलों से संबंधित, शिकायतों के निवारण के लिए उपलब्ध है।

स्पर्श [सिस्टम फ़ॉर पेंशन एडमिनिस्ट्रेशन (रक्षा)] ने उन पेंशनभोगियों को अंतिम छोर से कनेक्टिविटी प्रदान करने के लिए सेवा केंद्रों की स्थापना की परिकल्पना की है जो किसी भी कारण से सीधे स्पर्श पोर्टल तक पहुंचने में असमर्थ हों। रक्षा लेखा विभाग के कई कार्यालयों के अलावा, जो पहले से ही पेंशनभोगियों के लिए सेवा केंद्र के रूप में काम कर रहे हैं, रक्षा पेंशनभोगियों से संबंधित दो सबसे बड़े बैंकों-भारतीय स्टेट बैंक (एसबीआई) और पंजाब नेशनल बैंक (पीएनबी) को सेवा केंद्र के रूप में साझा तौर पर चुना गया है।

रक्षा लेखा नियंत्रक (सीजीडीए) श्री रजनीश कुमार और एसबीआई और पीएनबी के अधिकारियों के बीच 08 जुलाई, 2021 को नई दिल्ली में रक्षा सचिव डॉ. अजय कुमार और वित्तीय सलाहकार (रक्षा सेवाएं) श्री संजीव मित्तल की उपस्थिति में इस आशय के समझौते पर हस्ताक्षर किए गए। समझौते के तहत पेंशनभोगी अपने पेंशन मुद्दों से संबंधित किसी भी सेवा को प्राप्त करने के लिए इन दोनों बैंकों की विभिन्न शाखाओं से संपर्क कर सकते हैं।

इस प्रक्रिया में शामिल सभी लोगों के प्रयासों की सराहना करते हुए रक्षा सचिव ने कहा कि स्पर्श के कार्यान्वयन ने लंबे समय से लंबित आवश्यकता को पूरा किया। उन्होंने कहा कि यह फैसला रक्षा पेंशनभोगियों के लिए वरदान साबित होगा और उन्होंने एसबीआई और पीएनबी के अधिकारियों का भी शुक्रिया अदा किया। उन्होंने आग्रह किया कि मैनुअल डाटा के माइग्रेशन को सुगम बनाया जाए और इस प्रक्रिया को जल्द से जल्द पूरा किया जाए।

https://pib.gov.in/PressReleasePage.aspx?PRID=1733856

ThePrint

Fri, 09 July 2021

Indian Army Chief Naravane meets Italian counterpart, holds talks to boost defence cooperation

General Naravane and Lt Gen Pietro Serino discussed joint military cooperation, including military-to-military engagement. The army chief also met the Italian defence minister

New Delhi: Chief of Army Staff Gen M M Naravane on Thursday met his Italian counterpart Lt Gen Pietro Serino and Defence Minister Lorenzo Guerini in Rome and held extensive talks focusing on strengthening bilateral defence cooperation, including military-to-military engagement.

The Chief of Army Staff arrived in Rome on Wednesday on a two-day visit on the second leg of his two-nation tour of the UK and Italy.

About his meeting with Italian Defence Minister Guerini, officials said they exchanged views on strengthening defence cooperation between the two countries.

"General MM Naravane #COAS interacted with Lieutenant General Pietro Serino, Chief of Italian Army and discussed aspects of joint military cooperation," the Army tweeted.

Chief of Army Staff Gen M M Naravane with his Italian counterpart Lt Gen Pietro Serino (left), and Defence Minister Lorenzo Guerini (right) in Rome, on 8 July 2021 | Twitter/@adgpi

The Chief of Army Staff is also scheduled to inaugurate an Indian Army memorial in the Italian town of Cassino.

The memorial has been built to pay homage to Indian soldiers who lost their lives during World War II.

Ways to further intensify defence cooperation had figured prominently at a virtual summit between Prime Minister Narendra Modi and then Italian Prime Minister Giuseppe Conte in November last year.

The two prime ministers had underscored the need to further expand defence engagement through greater two-way collaboration and technology cooperation, including co-development and co-production of military hardware.

Italy has been a source of procurement of military hardware and platforms by India's armed forces.

Gen Naravane's visit to Italy comes days after Indian naval ship INS Tabar and Italian frigate ITS Antonio Marceglia carried out a two-day maritime partnership exercise in the Tyrrhenian sea.

The exercise on July 4 and 5 covered a wide range of naval operations, including air defence procedures, replenishment at sea, communication drills and cross deck helo operations by day and night, an Indian Navy spokesperson said.

Defence and military ties between the two countries have witnessed steady expansion.

https://theprint.in/defence/indian-army-chief-naravane-meets-italian-counterpart-holds-talks-to-boost-defence-cooperation/692248/

THE | DIPLOMAT
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Fri, 09 July 2021

Modi needs to personally push through Theater Command reforms in the Indian Military

As a recent controversy suggests, the plan for unified theater commands is experiencing significant headwinds. India cannot afford half-measures at this point

By Manoj Rawat

In the past week, an unseemly controversy has broken out in the Indian defense establishment over the unified theater commands. The Chief of defense staff, General Bipin Rawat, while overruling the Indian Air Force (IAF)'s objection regarding theater commands, called the IAF a "support arm" akin to the artillery or engineers in the army. This predictably drew a sharp response from Air Chief Marshal R.K.S. Bhadauria, who asserted the IAF's primacy in shaping the battlefield. This debate has once again brought into sharp focus the challenges being faced by the Defense Ministry in the bringing the three services under unified theater commands.

Credit: Depositphotos

On August 15, 2019, speaking from the ramparts of Red Fort on Independence Day, Prime Minister Narendra Modi made the announcement to establish the post of chief of defense staff (CDS) to increase coordination between the three services and provide a single point of military advice to the government. One of the first orders of business for the new CDS was to follow up on the government direction for the establishment of unified theater commands, as is the norm in the most modern militaries. A lot of studies and background discussions have gone into the establishment of these commands since 2019, but as the recent controversy suggests the plan is experiencing significant headwinds – especially from the Indian Air Force.

The need for higher defense reforms in India was acutely felt in the aftermath of Kargil War in 1999. The Vajpayee government at the time accepted most of the recommendations of the Kargil Review Committee (KRC) headed by K. Subrahmanyam – except the appointment of a CDS. As a half-way measure, instead of the CDS, the government created the Integrated Defense Staff (IDS) in 2002, which was to eventually serve as the CDS's Secretariat. For 17 years, the chief of the IDS, a 3-star appointee, remained on the fringes of defense planning with no real say in military matters. In 2012, the Naresh Chandra Committee recommended the appointment of a permanent chairman of the Chiefs of Staff Committee as a measure to allay apprehensions over the CDS. The CDS was also one of the 99 recommendations made by the Lt. General D.B. Shekatkar (retd) Committee, which submitted its report in December 2016.

The announcement of the CDS by Modi in 2019 was thus the culmination of over 20 years of dithering and compromises over the post. Unfortunately, the same confused and half-hearted approach of successive Indian administrations that marred the setting up of the CDS seems to have taken over the next important reform: establishing unified theater commands.

India currently has 17 single service commands: seven of the army, seven of the air force, and three of the navy. Each of these commands is located at a separate base. With the creation of the CDS and the efforts underway for the creation of theater commands, the debate in India has now shifted from the need for theater commands to how to unify the 17 single service commands into fewer unified theater commands.

As India grapples with implementation of theater commands, the experiences of other countries like the United States and China may provide some insights into this process. In United States, the

military was organized into geographical theater commands when President Ronald Reagan signed the Goldwater-Nicols Act of 1986. The act was the product of bipartisan drafting and discussion; it is named after Republican Senator Barry Goldwater and Democrat Representative William Nicols, who introduced it in the House. It eventually passed in the House of Representatives by a vote of 383-27 and in Senate by 95-0. The strong bipartisan support for the act ensured that political will was clearly stamped over discordant voices in the military, and the Act survived successive changes of administrations over the years.

The Chinese implementation of theater commands has also followed highest political direction. In November 2013, the Third Plenum of 18th Party Central Committee announced the creation of a "joint operation command … and theater joint operation command system" and in November 2015, President Xi Jinping declared the "current regional military area commands (also known as military region headquarters) will be adjusted and regrouped into new battle zone commands supervised by the CMC [Central Military Commission]." On February 1, 2016, at a high-profile ceremony attended by the entire CMC, five new "theater commands" were established and their commanders and political commissars (PC) announced. It took the Chinese government just three years from the announcement to the establishment of theater commands. While the Chinese model may not be directly applicable to the Indian milieu, it is important to note the top-down political mandate and clarity provided to the People's Liberation Army.

The disagreement in the Indian military over the structure and implementation of theater commands is a worrisome sign of lack of political direction and clarity on this important aspect of national security. To expect the CDS to do the heavy lifting and iron out the strong reservations from the services betrays a lack of understanding of inter-service dynamics. The constitution of theater commands is too important an issue to be left to the CDS or the individual services. The Modi government has shown commendable resolve to implement defense reforms stuck for decades, but the implementation of these reforms requires greater political mandate and guidance.

For a start, the government could consider formulating a draft bill on theater commands. This draft bill could be discussed in the relevant Parliamentary Committee(s) on Defense and thereafter introduced in both houses of the parliament. The Modi government has been able to pass many more challenging bills in the Parliament and with some bipartisan support the passage of such a bill should not be problematic. The bill must clearly lay down the geographical limits of the theater commands and the command structure from theater commanders to the civilian leadership. The chiefs of the Army, Navy, and Air Force can be assigned the responsibility of training, equipping and maintenance.

With the Chinese threat looming large on the LAC and security challenges from Pakistan continuing, it is important that the Indian government not only gets the most important defense reform in decades right but also gets the necessary bipartisan political and parliamentary heft behind the process to ensure smooth implementation and continuity. Half-measures like the ones for setting up CDS, which took two decades, will not suffice and it is a luxury which India cannot afford in the present security scenario.

If the Modi government gets the implementation of theater commands right, it could be its biggest legacy in national security domain for decades to come. Defense reforms of this magnitude are too important to be left to the generals and the admirals. The government must step in now and provide a clear political (and parliamentary) mandate and guidance for the implementation of theater commands.

(Manoj Rawat is a former Indian Naval Captain and director of naval operations at the Naval Headquarters, New Delhi. He has years of experience on frontline warships and senior operational and policy positions in the Ministry of Defense. Rawat is an alumnus of National Defense Academy, Singapore Aviation Academy, Indonesian Command and Staff College, and College of Defense Management. The views expressed here are his own.)

https://thediplomat.com/2021/07/modi-needs-to-personally-push-through-theater-command-reforms-in-the-indian-military/

FINANCIAL EXPRESS
Read to Lead

Fri, 09 July 2021

Future wars: Artificial Intelligence, drones and cyber weapons

Israel has shown the way how to use AI during the war and have even referred to it as the "The First Artificial Intelligence War" against Hamas during its operation Guardian of the Walls

By Col SC Tyagi (Retd)

Watching the videos of swarms of drones as autonomous aerial weapons reportedly used by Azerbaijan during last year's war with neighboring Armenia, in the disputed Nagorno-Karabakh region, and the recent Israelis – Hamas conflict using Artificial Intelligence (AI) to pinpoint destroy the targets deep inside Gaza or the 'Iron Dome' successfully beating back the Rockets fire assaults, makes us believe the warfare has come a long way. Israel has shown the way how to use AI during the war and have even referred to it as the "The First Artificial Intelligence War" against Hamas during its operation Guardian of the Walls. Supercomputing was extensively used and they heavily relied upon machine learning and data collection. Instead of using the land army or even the air force, AI was the key component and force multiplier for the Israeli Defense Force (IDF) said the Jerusalem Post, quoting an IDF officer. These two recent examples exemplify the redundancy and obsolescence of many weapons of war and even impinge upon the traditional strategy and tactics world plans to fight the next war. Oft spoken phrase "we generally make plans to fight the last war' needs to be taken a serious note of and rather look ahead at what the future world war would look like. If we were to visualize what the components may be – certainly the AI will be one of the important ingredients and the others will include Cyber weapons, Drones, Loitering Munitions, Ballistic missiles and Space based satellites in addition to the existing weapon platforms in the next world war.

A perceptible change, in the way a war is conducted, is clearly visible on the horizon and we must look at and reset, reconfigure key components and key tactics or strategy. Photo source: Keshav S)

Let's first look back at the path we have traversed. Wars have been fought ever since the idea of tribes was born. It has graduated from tribal wars to States fighting and nations going to war. Reasons for going to wars were either vanity, women, wealth, religion or grabbing a piece of rich and fertile land and thereafter to rule the land and its people. Arrows, lances, swords, machetes gave way to rifles and later to guns as the weapons of war. Two World Wars have been fought that devastated large swathes causing untold miseries to mankind. Emergence of tanks, artillery and rockets were extensively used by the end of the Second World War. Nuclear Bombs dropped at Hiroshima and Nagasaki capped the last World War. The Air Force and Navies have now started governing the aerospace and the seas respectively. But, one of the things common in all the wars is that the warfare is constantly changing, evolving and adopting innovative ideas and technology to be victorious. New dimensions, space and cyber, have already been added. Possibilities of use of chemical and bio war can't be easily denied today despite a number of treaties in vogue. Shape of the next world war, whenever it takes place, is looming large ahead of us and we must look ahead and prepare.

A perceptible change, in the way a war is conducted, is clearly visible on the horizon and we must look at and reset, reconfigure key components and key tactics or strategy. New dimensions, space and cyber, have already been added. Introduction of drones, loitering munitions and AI are

the new game changers. Loitering munitions, Israel made Harop, was used in Armenia by Azerbaijan and it gives us an idea of their pinpoint destruction capability without the use of traditional weapons and the psychological effects these can cause.

Saudi Aramco oil processing facilities in the Abqaiq and Khurais were attacked with bomb-laden drones in September 2019 and Houthi rebels in Yemen claimed to have used them. Actually, the use of drones gained prominence when the USA started using it against its "war on terror". The USA extensively used drone strikes against targets as part of the 'War on Terror'. Most of us have seen the videos of such attacks widely circulated on social media. Successes achieved by the Americans, especially in Afghanistan and Iraq, and by the IDF in the regional wars added a new dimension to the concept of war and soon the research and developments and the process to acquire or possess these weapons began in Russia and China, Turkey, Pakistan and India. None of these countries want to be left behind in the race for similar capability. Recent Army Day Parade held in Delhi has demonstrated India's willingness and its capabilities.

Advent of the era of swarms of drones in the AI enabled autonomous mode and other airborne Lethal Autonomous Robots (LARs), Israeli Iron Dome like capability to shoot down the incoming Rockets will completely change the battlefield. A new looking Infantry equipped with technologically advanced gadgets, weapons and modern logistics will appear on the scene for decision making when required or to consolidate the gain. Drones shooting down the enemy soldier are coming up and the days for hand to hand battle are fast receding into the background. Infantry will have a new avatar and new roles to play.

Does this mean the days of conventional wars are over? Not yet; the tanks, mechanized columns and artillery will still be useful but the role and employment will differ and it will not be set piece drills based upon the desired target or aim. Destruction of enemies' war making potential will need several means including the air force, navy and space based capabilities with AI leading from the front. Cyber intelligence and data collection will go along hand in hand. Remember the Iranian nuclear facility destroyed in Natanz? It all began with the GPS coordinates uncovered through a picture taken in the desert with another known nuclear Scientist and posted on Social Media by one of the Iranian Scientists. The picture provided the GPS coordinates and the place was confirmed to be the nuclear facility in Iran. Natanz Uranium enrichment facility had air gapped the area with no Internet connections with the outside world. Air gap was breached by Stuxnet which destroyed centrifuges to burn themselves out: it is considered to be the first cyber weapon today. An enhanced version of it might be on the drawing boards.

Trends Likely to dominate the next war

John Naisbitt once said, "Trends, like horses, are easier to ride in the direction that you are headed". Seeing the current trends, it is believed that the key trends in wars ahead would be the extensive use of AI, Drones, cyber weapons and use of killer apps, space based control of surveillance and creation of a defensive umbrella with offensive capabilities, Iron Dome like capabilities and the use of Lethal Autonomous Robots to kill. Let us see some of these key trends and extrapolate their images into future wars.

Artificial Intelligence (AI)

If the Israel-Hamas war is any indicator, AI will play a major role in the conflicts ahead. As per the media reports, Israel had gathered data for more than two years when it could be used in the latest war. The world over, gathering of mass datasets has already begun and data is considered to be the new gold. Countries like China are already believed to be gathering data for quite some time for future military use. It is believed that there is a company in the US which is only investing in the collection of data. Big data requires interpretation and predictive analyses. The results are then verified for its accuracy and then used in the AI algorithm. Let's look at one of the possible tasks in the current Indian context; the task of preventing crossing of the border by the terrorists or the enemy. A set of interconnected AI Bots deployed all along the Line of Control or at selected places on the border, with weapons under control placed on ground will make the arduous task simpler, off course man over riding the machine mix will have to be fused in. There will be 24X7 surveillance and the drones will come in handy for it and pass on the information to the bots for

further action. Similarly, there will be AI enabled autonomous systems to conduct specific missions, all you need is to visualize them now and create autonomous systems. AI will enable the military in automating tasks and assist in making them better and taking quicker decisions.

Drones

The latest war between Azerbaijan and Armenia witnessed the furious dance of loitering munitions and swarms of drones filling up the sky and causing havoc without sending out the Infantry, Tanks or Mechanized columns on ground in a large number; an unthinkable war scene a couple of years back. Unmanned Combat Aerial Vehicle (UCAV) or simply called Combat Drones carried bombs and missiles under varying levels of autonomy i.e. under real-time soldier controlled or programmed to deliver the ordnance autonomously, thus assuming a standoff role and depersonalizing the decision to attack. Recently, a drone dropping a bomb in Jammu on the airport is an example of it; let us not relegate it to a mere terror act, it is a precursor to bigger changes coming into the battlefield. Imagine an Infantry platoon attacking against a similar number of Combat Drones equipped with bombs, missiles and even automatic machine guns! Chances are that the latter would cause maximum damage with the least amount of casualties and execute it with greater precision and effects. This day is not very far off when it could soon be a reality.

Cyber Weapons

Stuxnet, widely believed to be jointly developed by the intelligence agencies of USA and Israel, was used against Iran's nuclear enrichment facility, and as such introduced cyber weapons to the war machinery. Similar weapons are not too far off and might be ready to go ahead. Also, Advanced Persistent Threats (APTs) pose a challenge to the effective and uninterrupted communication and surveillance mechanism, so vital to win a war. China has already got another Great Wall – the Great Firewall. PLA actively supports secret cyber intelligence units. If the communication equipment, radars, remote fire mechanism and controls are hacked or blocked, the war is already tilted in favor of the enemy. There are Supervisory Control and Data Acquisition (SCADA), a system of software and hardware elements that allows the military units to control the firing mechanism locally or at remote locations, when interrupted will cause enormous failure of the war efforts. The research and development is in the advanced stage in developing the Quantum Computing, once perfected it would perhaps provide considerable relief to the users of the cyber world.

Conclusion

The world is moving fast and there are other worrying trends such as the use of Crypto currency, which is allowing terrorists to transfer funds or pay for acquisition of weapons without a trace of who paid whom without using the well-established financial institutions like the Banks. Space based satellites and navigation setup are both useful as well as vulnerable and will play an important role in the future war. Today the technology is no more evolutionary from one version to another but it is leaping ahead, as Peter Warren Singer, a Cyber expert mentioned recently.

Disruptive technologies are changing the world rapidly. Good news is that ethical questions are being debated in San Francisco, the AI capital of the world, as to how far the technology should be allowed to be autonomous and whether the software designers and engineers need to have a code of conduct. But the day is not very far off when we see a new type of war clouds engulf us. A beginning is made, only the future will reveal how many of these trends will further change the shape of the next world war.

(The author has served in the Government at various levels and has served the Indian Army for more than three decades. He has authored "The Kargil Victory: Battles from Peak to Peak", "The Fourth Estate: A Force multiplier". Views expressed are personal and do not reflect the official position or policy of Financial Express Online.)

https://www.financialexpress.com/defence/future-wars-artificial-intelligence-drones-and-cyber-weapons/2286333/

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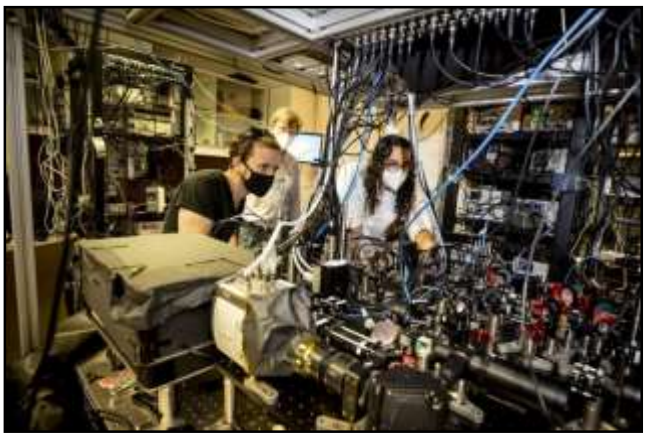
Team develops quantum simulator with 256 qubits, largest of its kind ever created

By Juan Siliezar

A team of physicists from the Harvard-MIT Center for Ultracold Atoms and other universities has developed a special type of quantum computer known as a programmable quantum simulator capable of operating with 256 quantum bits, or "qubits."



Dolev Bluvstein (from left), Mikhail Lukin, and Sepehr Ebadi are among the researchers who developed a special type of quantum computer known as a programmable quantum simulator. Photos by Rose Lincoln/Harvard Staff Photographer

The system marks a major step toward building large-scale quantum machines that could be used to shed light on a host of complex quantum processes and eventually help bring about real-world breakthroughs in material science, communication technologies, finance, and many other fields, overcoming research hurdles that are beyond the capabilities of even the fastest supercomputers today. Qubits are the fundamental building blocks on which quantum computers run and the source of their massive processing power.

"This moves the field into a new domain where no one has ever been to thus far," said Mikhail Lukin, the George Vasmer Leverett Professor of Physics, co-director of the Harvard Quantum Initiative, and one of the senior authors of the study published today in the journal *Nature*. "We are entering a completely new part of the quantum world."

According to Sepehr Ebadi, a physics student in the Graduate School of Arts and Sciences and the study's lead author, it is the combination of system's unprecedented size and programmability that puts it at the cutting edge of the race for a quantum computer, which harnesses the mysterious properties of matter at extremely small scales to greatly advance processing power. Under the right circumstances, the increase in qubits means the system can store and process exponentially more information than the classical bits on which standard computers run.

"The number of quantum states that are possible with only 256 qubits exceeds the number of atoms in the solar system," Ebadi said, explaining the system's vast size.

Already, the simulator has allowed researchers to observe several exotic quantum states of matter that had never before been realized experimentally, and to perform a quantum phase transition study so precise that it serves as the textbook example of how magnetism works at the quantum level.

These experiments provide powerful insights on the quantum physics underlying material properties and can help show scientists how to design new materials with exotic properties.

The project uses a significantly upgraded version of a platform the researchers developed in 2017, which was capable of reaching a size of 51 qubits. That older system allowed the researchers to capture ultra-cold rubidium atoms and arrange them in a specific order using a one-dimensional array of individually focused laser beams called optical tweezers.

This new system allows the atoms to be assembled in two-dimensional arrays of optical tweezers. This increases the achievable system size from 51 to 256 qubits. Using the tweezers, researchers can arrange the atoms in defect-free patterns and create programmable shapes like square, honeycomb, or triangular lattices to engineer different interactions between the qubits.

"The workhorse of this new platform is a device called the spatial light modulator, which is used to shape an optical wavefront to produce hundreds of individually focused optical tweezer beams," said Ebadi. "These devices are essentially the same as what is used inside a computer projector to display images on a screen, but we have adapted them to be a critical component of our quantum simulator."

The initial loading of the atoms into the optical tweezers is random, and the researchers must move the atoms around to arrange them into their target geometries. The researchers use a second set of moving optical tweezers to drag the atoms to their desired locations, eliminating the initial randomness. Lasers give the researchers complete control over the positioning of the atomic qubits and their coherent quantum manipulation.

Other senior authors of the study include Harvard Professors Subir Sachdev and Markus Greiner, who worked on the project along with Massachusetts Institute of Technology Professor Vladan Vuletić, and scientists from Stanford, the University of California Berkeley, the University of Innsbruck in Austria, the Austrian Academy of Sciences, and QuEra Computing Inc. in Boston.

"Our work is part of a really intense, high-visibility global race to build bigger and better quantum computers," said Tout Wang, a research associate in physics at Harvard and one of the paper's authors. "The overall effort [beyond our own] has top academic research institutions involved and major private-sector investment from Google, IBM, Amazon, and many others."

The researchers are currently working to improve the system by improving laser control over qubits and making the system more programmable. They are also actively exploring how the system can be used for new applications, ranging from probing exotic forms of quantum matter to solving challenging real-world problems that can be naturally encoded on the qubits.

"This work enables a vast number of new scientific directions," Ebadi said. "We are nowhere near the limits of what can be done with these systems."

More information: Sepehr Ebadi et al, Quantum phases of matter on a 256-atom programmable quantum simulator, *Nature* (2021). DOI: 10.1038/s41586-021-03582-4

Journal information: *Nature*

https://phys.org/news/2021-07-team-quantum-simulator-qubits-largest.html

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Unlocking radiation-free quantum technology with graphene

"Heavy fermions" are an appealing theoretical way to produce quantum entangled phenomena, but until recently have been observed mostly in dangerously radioactive compounds. A new paper in *Physical Review Letters* has shown it is possible to make heavy fermions in subtly modified graphene, which is much cheaper and safer.

Schematic of how heavy fermions form in twisted graphene sheets. Credit: Jose Lado, Aalto University

Rare-earth compounds have fascinated researchers for decades due to the unique quantum properties they display, which have so far remained totally out of reach of everyday compounds. One of the most remarkable and exotic properties of those materials is the emergence of exotic superconducting states, and particularly the superconducting states required to build future topological quantum computers. While these specific rare-earth compounds, known as heavy fermion superconductors, have been known for decades, making usable quantum technologies out of them has remained a critically open challenge. This is because these materials contain critically radioactive compounds, such as uranium and plutonium, rendering them of limited use in real-world quantum technologies.

New research has now revealed an alternative pathway to engineer the fundamental phenomena of these rare-earth compounds solely with graphene, which has none of the safety problems of traditional rare-earth compounds. The exciting result in the new paper shows how a quantum state known as a "heavy fermion" can be produced by combining three twisted graphene layers. A heavy fermion is a particle—in this case an electron—that behaves like it has a lot more mass than it actually does. The reason it behaves this way stems from unique quantum many-body effects that were mostly only observed in rare-earth compounds until now. This heavy fermion behavior is known to be the driving force of the phenomena required to use these materials for topological quantum computing. This new result demonstrates a new, non-radioactive way of achieving this effect using only carbon, opening up a pathway for sustainably exploiting heavy fermion physics in quantum technologies.

In the paper authored by Aline Ramires, (Paul Scherrer Institute, Switzerland) and Jose Lado (Aalto University), the researchers show how it is possible to create heavy fermions with cheap, non-radioactive materials. To do this, they used graphene, which is a one-atom thick layer of carbon. Despite being chemically identical to the material that is used in regular pencils, the sub-nanometer thickness of graphene means that it has unexpectedly unique electrical properties. By layering the thin sheets of carbon on top of one another in a specific pattern, where each sheet is rotated in relation to the other, the researchers can create the quantum properties effect that results in the electrons in the graphene behaving like heavy fermions.

"Until now, practical applications of heavy fermion superconductors for topological quantum computing has not been pursued much, partially because it required compounds containing uranium and plutonium, far from ideal for applications due to their radioactive nature," says Professor Lado. "In this work we show that one can aim to realize the exactly very same physics just with graphene. While in this work we only show the emergence of heavy fermion behavior, addressing the emergence of topological superconductivity is a natural next step, which could potentially have a groundbreaking impact for topological quantum computing."

Topological superconductivity is a topic of critical interest for quantum technologies, also tackled by alternative strategies in other papers from Aalto University Department of Applied Physics, including a previous paper by Professor Lado. "These results potentially provide a carbon-based platform for exploitation of heavy fermion phenomena in quantum technologies, without requiring rare-earth elements," concludes Professor Lado.

More information: Aline Ramires et al, Emulating Heavy Fermions in Twisted Trilayer Graphene, *Physical Review Letters* (2021). DOI: 10.1103/PhysRevLett.127.026401

Journal information: *Physical Review Letters*

https://phys.org/news/2021-07-radiation-free-quantum-technology-graphene.html

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Researchers bring attack-proof quantum communication two steps forward

Quantum key distribution (QKD) is a method for secure communication that uses quantum mechanics to encrypt information. While the security of QKD is unbreakable in principle, if it is incorrectly implemented, vital information could still be stolen by attackers. These are known as side-channel attacks, where the attackers exploit weaknesses in the setup of the information system to eavesdrop on the exchange of secret keys.

Researchers from the National University of Singapore (NUS) have developed two methods, one theoretical and one experimental, to ensure that QKD communications cannot be attacked in this way. The first is an ultra-secure cryptography protocol that can be deployed in any communication network that needs long-term security. The second is a first-of-its-kind device that defends QKD systems against bright light pulse attacks by creating a power threshold.

Assistant Professor Charles Lim (back) and Dr Zhang Gong (front) with their team's first-of-its-kind quantum power limiter device. Credit: National University of Singapore

"Rapid advances in quantum computing and algorithmic research mean we can no longer take today's toughest security software for granted. Our two new approaches hold promise to ensuring that the information systems which we use for banking, health and other critical infrastructure and data storage can hold up any potential future attacks," said Assistant Professor Charles Lim, from the NUS Department of Electrical and Computer Engineering and Centre for Quantum Technologies, who led the two research projects.

Future-proof quantum communication protocol

Typically, in QKD, two measurement settings are used—one to generate the key and the other to test the integrity of the channel. In a paper published in the journal *Nature Communications* on 17 May 2021, the NUS team showed that with their new protocol, users can independently test the other party's encryption device by generating a secret key from two randomly chosen key generation settings instead of one. The researchers demonstrated that introducing an extra set of key-generating measurements for the users makes it harder for the eavesdropper to steal information.

"It's a simple variation of the original protocol that started this field, but it can only be tackled now thanks to significant developments in mathematical tools," said Professor Valerio Scarani, who was one of the inventors of this type of method and is a co-author of the paper. He is from the NUS Department of Physics and Centre for Quantum Technologies.

Compared to the original 'device-independent' QKD protocol, the new protocol is easier to set up, and is more tolerant to noise and loss. It also gives users the highest level of security allowable by quantum communications and empowers them to independently verify their own key generation devices.

With the team's setup, all information systems built with 'device-independent' QKD would be free from misconfiguration and mis-implementation. "Our method allows data to be safe against attackers even if they have unlimited quantum computing power. This approach could lead to a truly secure information system, eliminating all side-channel attacks and allowing end-users to monitor its implementation security easily and with confidence," explained Asst Prof Lim.

A first-of-its-kind quantum power limiter device

Quantum cryptography, in practice, uses optical pulses with very low light intensity to exchange data over untrusted networks. Leveraging quantum effects can securely distribute secret keys, generate truly random numbers, and even create banknotes that are mathematically unforgeable.

However, experiments have shown that it is possible to inject bright light pulses into the quantum cryptosystem to break its security. This side-channel attack strategy exploits the way injected bright light is reflected to the outside environment, to reveal the secrets being kept in the quantum cryptosystem.

In a new paper published in *PRX Quantum* on 7 July 2021, the NUS researchers reported their development of the first optical device to address the issue. It is based on thermo-optical defocusing effects to limit the energy of the incoming light. The researchers use the fact that the energy of the bright light changes the refractive index of the transparent plastic material embedded in the device, thus it sends a fraction of the light out of the quantum channel. This enforces a power limiting threshold.

The NUS team's power limiter can be seen as an optical equivalent of an electric fuse, except that it is reversible and does not burn when the energy threshold is breached. It is highly cost-effective, and can be easily manufactured with off-the-shelf components. It also does not require any power, so it can be easily added to any quantum cryptography system to strengthen its implementation security.

Asst Prof Lim added, "It is imperative to close the gap between the theory and practice of quantum secure communications if we are to use it for the future Quantum Internet. We do this holistically—on one hand, we design more practical quantum protocols, and on the other hand, we engineer quantum devices that conform closely with the mathematical models assumed by the protocols. In doing so, we can significantly narrow the gap."

More information: René Schwonnek et al, Device-independent quantum key distribution with random key basis, *Nature Communications* (2021). DOI: 10.1038/s41467-021-23147-3

Journal information: *Nature Communications*

https://phys.org/news/2021-07-attack-proof-quantum.html

Hindustan Times

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Why some people get more sick from Covid-19? Global study finds gene link

TYK2 gene appears strongly connected to the disease severity, the study has said

By Poulomi Ghosh

An international study involving over 3,000 researchers from 25 countries has found out the genetic answer to the question of why some people get more sick from Covid while some other do not report any symptoms. There are age and co-morbidity factors, but still, the SARS-CoV-2 virus has not been exactly the same for two people. And the answer to it lies in TYK2 gene that appears strongly connected to the disease severity, the study published in Nature said.

The research began in March 2020 and in its course, the scientists studied almost 50,000 infected people and two million uninfected.(PTI)

"Susceptibility to life-threatening infections and immune-mediated diseases are both strongly heritable. In particular, susceptibility to respiratory viruses such as influenza is heritable and known to be associated with specific genetic variants. In the case of Covid-19, one genetic locus—on chromosome 3p21.31—has been repeatedly associated with hospitalization. As with other virus-associated diseases, there are several examples of loss-of-function variants affecting essential immune processes that lead to severe disease in young people," the study said.

The results may help pinpoint “some clear biological markers that could be used to repurpose existing drugs or drugs in the pipeline,” Bloomberg quoted Mark Daly, a study co-author who is the director of the Institute for Molecular Medicine Finland at the University of Helsinki and a geneticist at Harvard University, as saying.

The research began in March 2020 and in its course, the scientists studied almost 50,000 infected people and two million uninfected. About 13 generic locations have been identified in the research which are strongly linked to either susceptibility to the virus or severity. Some of these 13 genetic locations had previously been linked to other illnesses, including lung cancer and autoimmune diseases, the study said.

Several studies aiming to shed light on the genetic link behind severity have associated blood group with SARS-CoV-2 and claimed that O blood type provides more protection from Covid-19.

(With inputs from Bloomberg)

https://www.hindustantimes.com/india-news/why-some-people-get-more-sick-from-covid-19-global-study-finds-gene-link-101625762779843.html