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CONTENTS

S. No.	TITLE	Page No.
DRDO News		1-7
DRDO Technology News		1-5
1.	Arab, Southeast Asian states file requests for Russian-Indian BrahMos missiles	1
2.	BrahMos missile makers to invest Rs 300 crore to set up shop in Uttar Pradesh Defence Corridor	2
3.	The next war will be fought with machines: Dr Ojha	3
COVID 19: DRDO's Contribution		6-7
4.	India gifts medical oxygen plant to Nepal	6
5.	भारत ने नेपाल को ऑक्सीजन संयंत्र दान किया	7
Defence News		8-14
Defence Strategic: National/International		8-14
6.	Raksha Mantri Shri Rajnath Singh to commission indigenously built Indian Coast Guard Ship Vighraha on Saturday	8
7.	Indian Navy participates in Naval Exercise Malabar	9
8.	भारतीय नौसेना ने मालाबार नौसैन्य अभ्यास में भाग लिया	10
9.	Chief of Defence Staff General Bipin Rawat expresses concern about 'terror activity' spilling into India with Taliban taking over Afghanistan	11
10.	Indian Navy's new amphibious ships to be packed with UAVs, missiles, helicopters	12
11.	India needs to work on suitable format for new Theatre Commands: Ex-Army Chief Shankar Roychowdhury	13
12.	Vintage aircraft museum: UT, IAF to sign pact today	14
Science & Technology News		15-20
13.	Discovery of fastest ever magnetic wave propagation	15
14.	Development of Cd-free quantum dot synthesis technology	16
15.	Study unveils strain-induced quantum phase transitions in magic-angle graphene	17
COVID-19 Research News		19-20
16.	Explained: Has Covid-19 become endemic in India?	19



Wed, 25 Aug 2021

Arab, Southeast Asian states file requests for Russian-Indian BrahMos missiles

*BrahMos is a supersonic cruise missile produced by the
BrahMos Aerospace Russian-Indian Joint Venture*

Kubinka /Moscow Region/, August 25. /TASS/. Some Arab and Southeast Asian countries have filed requests for BrahMos missile systems, Director of Russia's Federal Service for Military-Technical Cooperation Dmitry Shugayev told a briefing on Wednesday.

"Currently, BrahMos missile systems are being actively promoted to third countries and are generating interest among foreign customers. Some countries, in particular, countries of the Arab East and Southeast Asia have already sent their requests for taking delivery of these systems," Russia's military cooperation chief said.

BrahMos is a supersonic cruise missile produced by the BrahMos Aerospace Russian-Indian Joint Venture. The BrahMos missile has been developed by Russia's Research and Production Association of Machine-Building and India's Defense Research and Development Organization (DRDO).

The missile derives its name from two rivers: the Brahmaputra in India and the Moskva in Russia. The missile's first test-launch took place on June 12, 2001 from a coastal launcher. The BrahMos missile's different versions are operational in all three branches of India's Armed Forces: the Air Force, the Navy and the Army.

<https://tass.com/defense/1330093>

Fri, 27 Aug 2021

BrahMos missile makers to invest Rs 300 crore to set up shop in Uttar Pradesh Defence Corridor

A company source said that over 100 BrahMos missiles are planned to be built over the next three years. In this regard, Brahmos Aerospace CEO and MD Sudhir Kumar Misra met UP Chief Minister Yogi Adityanath and sought 200 acres of land for the project

By Anish Kumar

New Delhi: BrahMos Aerospace will invest Rs 300 crore in setting up its missile manufacturing unit at Lucknow node under the Uttar Pradesh Defence Corridor.

A company source said that over 100 BrahMos missiles are planned to be built over the next three years.

In this regard, Brahmos Aerospace CEO and MD Sudhir Kumar Misra met UP chief minister Yogi Adityanath and sought 200 acres of land for the project.

The official said that an agreement had been reached to provide the company with 200 acres of land to build the BrahMos Production Centre.



There are 6 nodes in the Uttar Pradesh Defence Corridor. These include Lucknow, Kanpur, Chitrakoot, Jhansi, Agra, and Aligarh nodes.

The BrahMos cruise missile is a state-of-the-art cruise missile designed, developed and produced by BrahMos Aerospace, a joint venture between India's Defence Research and Development Organisation and Russia's NPO Mashinostroyeniya.

The supersonic cruise missile is based on the technology seen in Russia's P-800 Oniks cruise missile.

As per government estimates, sources said, about 500 engineers and technical people will get direct employment in the BrahMos Production Center. Another 5,000 people are expected to get indirect employment and 10,000 would get work through the production centre.

According to Uttar Pradesh Expressways Industrial Development Authority officials, at least 29 firms submitted their plans to the government for setting up shop in the Aligarh node and sought land for the same.

Similarly, 11 firms wanted land for setting up factories in the Lucknow node, eight in the Kanpur node and six in the Jhansi node. Based on the proposals, UPEDIA has so far allotted 55.4 hectares of land in the Aligarh node to 19 international companies. At least four acres of land have been allotted to two companies in the Kanpur node and 15 acres of land have been earmarked for another firm in Jhansi.

<https://newsable.asianetnews.com/india-defence/brahmos-missile-makers-to-invest-rs-300-crore-in-uttar-pradesh-defence-corridor-vpn-qyfvb2>

The next war will be fought with machines: Dr Ojha

“Cybersecurity is not just about credit card hacks. On a macro level, cybersecurity is about attacks to dislocate the satellite, turning a missile, about hacking jets and attacks on critical infrastructure like the power sector which can jolt the economy at large”, explains Dr Nishakant Ojha

By Janani Janarathanan

Dr Nishakant Ojha, an advisor in matters of Cyber, Aerospace and Counter Terrorism, is currently the Chief Strategic Officer with Broadcast Engineering Consultants India Limited (BECIL). He is an eminent expert on counter-terrorism for the West Asia & Middle East. And notably, he has worked with the Defence and Para Military of the Government of India. Talking to BW Businessworld, he expounds the realities of the cyber security infrastructure in the country, the Aatmanirbhar mission in terms of Defence Manufacturing and how India needs to prepare for the next digital threat.



Edited Excerpts:

Q: Firstly, to set a context, let's begin with the state of cybersecurity. We've heard so much in the news about shadowpad and our power grids being affected. Addressing the chatter about that, what would you say is the state of our cyber security infrastructure in the country?

A: The current position of India in the sphere of the cybersecurity is not robust enough to handle the attacks which are being done on us. We are doing a lot of things continuously and we are working towards a robust ecosystem, but post pandemic, nearly 1.16 million cases of cyberattacks was reported in 2020. This is 3 times more than 2019 and more than 20 times higher compared to 2016. When we talk post pandemic, we have all shifted to the digital mode, and Digital India is very vulnerable to these new age cyberattacks. Today, technology is constantly changing, we are talking about artificial intelligence, military machine learning, IoT and also about the quantum.

Now that we've talked about the scenario, let's talk about the ecosystem. Every day we get around 50,000 cyberattacks in India and most attacks are basically from North Korea, China and our West-Asian countries and inside also from people parked inside our own soil. So we need to move into a rapid action, make ourselves strong so that we can sustain the changing dynamics in cybersecurity.

Q: How prepared are we to handle this?

A: I'm seeing a 37 per cent rise every quarter from 2020 till now in the cyberattacks. And coming to our last mile dependency, we are still dependant on other countries to safeguard our interests. We have outdated systems and as we move towards new technologies and AI, ML, IoT and Quantum, things will take a different shape. The spread of digital adoption across public and private sector has left little time for the proper development of backend cybersecurity infrastructure. Thus, I have been talking to the government about setting up a cyber war room for Defence and it is very timely and important.

Also at the core is the public perception and the limited understanding about the cybersecurity. Cybersecurity is not just about credit card hacks. On a macro level, cybersecurity is about attacks to dislocate the satellite, turning a missile, about hacking jets and attacks on critical infrastructure like the power sector which can jolt the economy at large

Q: Building on public awareness and the public perception, give us a sense of what we are up against.

A: When we come to India, we are often on a defensive mode and not offensive. We need to have security operation centres that are capable of handling the social engineering, phishing attacks and attacks using emerging technology. Often we are not able to detect or read the characteristics of the malware and viruses which are entering. So there is data breach, malware, ransomware and cloud vulnerabilities which we must guard against. And there is no quick fix, it's an ongoing process. There is no solution where you just get a software installed in your system or in your network and you will become cyber safe. Take a country like North Korea who extensively indulge in hacking, it contributes heavily to their economy and this is alarming. While we can create a security network and operate on sophisticated equipments, unless we are not aware of the level of risk no device or software can help us.

Q: Now allow me to steer this conversation to another aspect of security and surveillance technology- Drones. You are working with the counter-drone technology in the country. Could you give us a context to tell us when these counter drones will be in function and how it will help us in our counter-terrorism and cybersecurity response?

A: Firstly, we need to approach this differently. When Cyberspace evolved, it became a buzzword. And now, because of one attack a couple of months back, everybody's talking about counter drones, UAV and the like. But we are not clear on what we have to do. We have to decide based on what we need. When we talk about the contemporary and the emerging security challenges, the Chinese military's institutions in the Himalayas and the Pakistan proxy war is our reality. So we need initiatives to counter this.

I have given the presentation to many agencies and I believe the future war will not be of humans but of machines. All countries are developing their own IPs and operating on different frequencies and from various command centres. In India too, we are promoting talent under Aatmanirbhar Bharat. We are promoting start-ups in the defence sector and trying to localize the production of these tools. But we are still in the early stages, we cannot do everything under Aatmanirbhar. It's not like we can start manufacturing everything in a short span. We have to work on the concept of transfer of technology. We need to become a good systems integrator, so that we can borrow technology and then we can indigenise it. We are already collaborating with foreign universities who have a domain expertise in creating the UAV that can carry the payloads of something around 500 kg and they can fly up to go around 50,000 kilometres and they also have the ability to stay in orbit for four to five days if something goes wrong.

Talking about my work, we are working with the couple of foreign universities and foreign scientists. In due course of time, around 6-7 months, we will be able to demonstrate. I am keen to fulfil the objective of Prime Minister Narendra Modi of Aatmanirbhar Bharat. Our drones will be on par with the Israelis, on whom we are currently totally dependent. Frankly speaking 90% of drones are customised from commercial shelves. There are no tailor-made solutions, yet. The key is to identify the need and how we will use them.

Q: My question is along the lines of domestic drone technology. And what are we doing on the home front? The draft drone bill which is supposed to be effective from the 5th of August gives a very fertile climate for drone development in the country. How do you see commercial drones shaping up?

A: Commercially, we are working on drones already which will be good for the supply chain and for the farmers. But when you're talking about the defence level drones, we need a certain kind which can fly and hit targets. Drones today are amalgamated with the GPS and they're working through the satellite. Even if we are they have able to block the frequency, they have got the backend connectivity to the satellites and GPS. We need to work on drones and counter-drones parallelly. We have to become a system integrator, but we have to involve ourselves in all kinds of activities, so that reverse intelligence can take place and in due course of time, we can start manufacturing within India. That's a real meaning of Aatmanirbhar.

Q: So how do we take this momentum forward and what is the future of drone technology?

A: The challenges that I have found as a scientist is that we have to work more on the frame of the drones. The higher drones can fly, and more payload they can carry with them the more effective they will be.

When we come to solutions, 'graphene' will reduce the weight of the frame by at least 500 times. With a lighter weight, it will be able to carry a lot of payload. Now with the intervention of the Honourable Prime Minister, there is more clarity on this front in terms of the work to be done. What we need now is to think more on UAVs and the counter drones which basically protects our territory and border from their enemies and secures our orbit.

Government has taken many initiatives to promote start-ups in the areas of UAVs and Counter drones. The Defence Research and Development Organisation (DRDO) has created 8 advanced technology centres across the country to carry out research activity. The Atal Innovation mission is also noteworthy. In fact, the procurement of defence related goods and services by the government from small and micro enterprises has risen by 2.2 percent and in INR terms, 9.29 crores in the financial year 2021. This is good for the development climate. However, it doesn't mean we should become complacent, our neighbours have high defence budgets. The key is to remain clear of what we need and how we can proceed from here.

Finally I want to add, as of my mission for the defence, I just want to put the figure that in the year 2021 and 2022 in Indian army, we have 6 theatres, and there will be a need for 3000 drones and counter drones. 11,000 crores is the predicted figure. 14,000 crores for agriculture, 11,000 for Defence and Homeland Security and 4,000 crore for rural and urban development. There is immense potential in this field and India is now in a position to decide how we will move forward.

www.businessworld.in/article/The-Next-War-Will-Be-Fought-With-Machines-Dr-Ojha/26-08-2021-402049/

COVID 19: DRDO's Contribution

FINANCIAL EXPRESS
Read to Lead

Fri, 27 Aug 2021

India gifts medical oxygen plant to Nepal

The plant has been installed at B P Koirala Institute of Health Sciences (BPKIHS), and is designed to cater to providing 5 LPM per person, amounting to a total capacity of 960 LPM, it said

India on Thursday donated a medical oxygen plant to Nepal as part of New Delhi's continued commitment to the Himalayan nation in tackling the COVID-19 pandemic. India's Ambassador here Vinay Mohan Kwatra handed over the 960 Litres Per Minute (LPM) medical oxygen plant to Minister of State for Health Umesh Shrestha at a ceremony at the Ministry of Health and Population, as part of India's robust partnership with Nepal in tackling the coronavirus pandemic, the Indian Embassy here said in a statement.

The plant has been installed at B P Koirala Institute of Health Sciences (BPKIHS), and is designed to cater to providing 5 LPM per person, amounting to a total capacity of 960 LPM, it said.

The DEBEL Medical Oxygen Plant, developed by the Defence Research and Development Organisation (DRDO), carries a capacity to serve 200 patients simultaneously, it said.

Kwatra highlighted the significance of the deep-rooted and multifaceted partnership between India and Nepal, reiterating that the gift symbolised India's continued commitment to Nepal in tackling the COVID-19 pandemic, according to the statement. "The Government of India will continue to stand with Nepal and its people in fighting the pandemic and providing necessary assistance as best possible in accordance with our deep-rooted bilateral ties," he said.

Shrestha said that the donation of oxygen plant was a critical health infrastructure that would reinforce Nepal's efforts in tackling the COVID-19 pandemic.

The assistance by the Government of India two decades ago in building BPKIHS in Dharan was an important milestone, and the latest addition of the oxygen plant is another milestone that would go a long way in serving people of Nepal, particularly of Provinces 1 and 2, the minister said.

Oxygen is a key clinical gas for the treatment of COVID-19 patients, as has been experienced during the second wave of the pandemic in both India and Nepal. With the plant, hospitals now have the option of generating medical oxygen on-site, in a highly cost-effective manner.

India is only the fourth country in the world to develop the technology which utilises the pressure swing adsorption technique and molecular sieve technology to generate oxygen directly from atmospheric air.

The installation of the medical oxygen plant would help in avoiding the dependency of hospitals for scarce oxygen cylinders, according to the statement. This would help in reducing the logistics of transporting cylinders and also continuous and reliable oxygen supply available round the clock, it added.



Oxygen is a key clinical gas for the treatment of COVID-19 patients, as has been experienced during the second wave of the pandemic in both India and Nepal. (Photo source: ANI)

<https://www.financialexpress.com/lifestyle/health/india-gifts-medical-oxygen-plant-to-nepal/2318264/lite/>

भारत ने नेपाल को ऑक्सीजन संयंत्र दान किया

भारत ने कोविड-19 महामारी से निपटने में नेपाल के प्रति अपनी प्रतिबद्धता के तहत हिमालयी देश को बृहस्पतिवार को एक चिकित्सकीय ऑक्सीजन संयंत्र दान किया। भारतीय दूतावास ने इसकी जानकारी दी। भारतीय दूतावास ने बयान जारी कर कहा कि नेपाल में भारत के राजदूत विनय मोहन क्वात्रा ने स्वास्थ्य एवं जनसंख्या मंत्रालय में आयोजित एक समारोह में नेपाल के स्वास्थ्य राज्य मंत्री उमेश श्रेष्ठ को कोरोना वायरस से निपटने में नेपाल के साथ भारत की मजबूत साझेदारी के तहत 960 लीटर प्रति मिनट (एलपीएम) उत्पादन वाला चिकित्सकीय ऑक्सीजन संयंत्र सौंपा। यह संयंत्र बी पी कोइराला इंस्टीट्यूट ऑफ हेल्थ साइंसेज (बीपीकेआईएचएस) में स्थापित किया गया है और इसे प्रति व्यक्ति 5 एलपीएम प्रदान करने के लिए डिज़ाइन किया गया है, जिसकी कुल क्षमता 960 एलपीएम की है। रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) द्वारा विकसित डीईबीईएल चिकित्सीय ऑक्सीजन संयंत्र में एक साथ 200 मरीजों को आक्सीजन आपूर्ति करने की क्षमता है। बयान के अनुसार, क्वात्रा ने भारत और नेपाल के बीच गहरी और बहुआयामी साझेदारी के महत्व पर प्रकाश डाला और कहा कि यह उपहार कोविड-19 महामारी से निपटने में नेपाल के लिए भारत की निरंतर प्रतिबद्धता का प्रतीक है। उन्होंने कहा, "भारत सरकार नेपाल और उसके लोगों के साथ महामारी से लड़ने और हमारे गहरे द्विपक्षीय संबंधों के अनुसार यथासंभव आवश्यक सहायता प्रदान करना जारी रखेगी।" श्रेष्ठ ने कहा कि ऑक्सीजन संयंत्र का दान एक महत्वपूर्ण स्वास्थ्य ढांचा है जो कोविड-19 महामारी से निपटने में नेपाल के प्रयासों को सुदृढ़ करेगा। उन्होंने कहा कि धरान में बीपीकेआईएचएस के निर्माण में दो दशक पहले भारत सरकार द्वारा दी गई सहायता एक महत्वपूर्ण मील का पत्थर थी और यह ऑक्सीजन संयंत्र एक और मील का पत्थर है जो नेपाल के लोगों, विशेष रूप से प्रांत एक और दो के लोगों की सेवा प्रदान करने में महत्वपूर्ण साबित होगा। कोविड-19 रोगियों के उपचार के लिए ऑक्सीजन की एक महत्वपूर्ण भूमिका है, जैसा कि भारत और नेपाल दोनों में महामारी की दूसरी लहर के दौरान अनुभव किया गया है। संयंत्र के जरिये अस्पतालों के पास अत्यधिक किफायती तरीके से मौके पर ही चिकित्सकीय ऑक्सीजन उत्पादन करने का विकल्प है।

<https://www.lokmatnews.in/world/india-donates-oxygen-plant-to-nepal-b421/>

Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Thu, 26 Aug 2021 5:11PM

Raksha Mantri Shri Rajnath Singh to commission indigenously built Indian Coast Guard Ship Vighraha on Saturday

Key Highlights:

- *ICGS Vighraha is seventh in the series of Offshore Patrol Vessels*
- *Indigenously built by L&T Ship Building Limited*
- *Fitted with advanced fire power*
- *Designed to carry one twin-engine Helicopter & four high speed boats*
- *To be based in Visakhapatnam & operate on eastern seaboard*

Indian Coast Guard (ICG) Ship Vighraha, seventh in the series of Offshore Patrol Vessels (OPVs), will be commissioned by Raksha Mantri Shri Rajnath Singh in Chennai on August 28, 2021. The ship will be based in Visakhapatnam, Andhra Pradesh and operate on the eastern seaboard under the Operational and Administrative Control of the Commander, Coast Guard Region (East).

The 98-meter OPV, with a complement of 11 officers and 110 sailors, has been designed and built indigenously by Larsen & Toubro Ship Building Limited. It is fitted with advanced technology radars, navigation & communication equipment, sensors and machinery capable of operating in tropical sea conditions. The vessel is armed with a 40/60 Bofors gun and fitted with two 12.7 mm Stabilised Remote Control Gun with fire control system. The ship is also equipped with integrated bridge system, integrated platform management system, automated power management system and high-power external fire-fighting system.



The ship is also designed to carry one twin-engine Helicopter and four high speed boats for boarding operation, search & rescue, law enforcement and maritime patrol. The ship is also capable of carrying pollution response equipment to contain oil spill at sea. The ship displaces approximately 2,200 tons and is propelled by two 9100 KW diesel engines to attain a maximum speed of 26 nautical miles per hour with endurance of 5000 nm at economical speed.

The ship, on joining the Coast Guard Eastern fleet, will be deployed extensively for EEZ surveillance and other duties as enshrined in the Coast Guard Charter to safeguard the country's maritime interests. The ICG, with this ship joining the fleet, will have 157 ships and 66 aircraft in its inventory.

The commissioning ceremony will also be attended by Chief Minister of Tamil Nadu Shri M K Stalin, Chief of Army Staff General M M Naravane, Director General Indian Coast Guard Shri K Natarajan and other senior dignitaries of the central & state governments.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1749276>



**Press Information Bureau
Government of India**

Ministry of Defence

Thu, 26 Aug 2021 9:44AM

Indian Navy participates in Naval Exercise Malabar

Indian Navy is participating in the sea phase of Exercise Malabar 2021 from 26 – 29 August 2021 along with the US Navy (USN), Japanese Maritime Self Defence Force (JMSDF) and the Royal Australian Navy (RAN).

Malabar series of maritime exercise commenced in 1992 as an IN-USN Exercise. In 2015, JMSDF joined Malabar as a permanent member. The 2020 edition witnessed participation of the Royal Australian Navy. This year marks the 25th edition of Ex Malabar, being hosted by USN in the Western Pacific.

The Indian Navy's participation includes INS Shivalik and INS Kadmatt and P8I patrol aircraft led by Rear Admiral Tarun Sobti, VSM, Flag Officer Commanding Eastern Fleet. The US Navy will be represented by USS Barry, USNS Rappahannock, USNS Big Horn and P8A patrol aircraft. The Japanese Maritime Self Defence Force will be represented by JS Kaga, Murasame and Shiranui, in addition to a submarine and P1 patrol aircraft. The Royal Australian Navy will be represented by HMAS Warramunga.

The *IN* ships sailed from Guam where they participated in Operational Turn Around from 21-24 August 21. During this phase, the Flag Officer Commanding-in-Chief, Eastern Naval Command Vice Adm AB Singh, AVSM, VSM exchanged views with counterparts in the US Navy.

MALABAR-21 would witness complex exercises including anti-surface, anti-air and anti-submarine warfare drill, and other manoeuvres and tactical exercises. The exercise will provide an opportunity for participating navies to derive benefit from each other's expertise and experiences.

The conduct of the exercise while observing health protocols during the COVID-19 global pandemic is a testimony to the synergy between the participating navies and our shared vision for a free, open and inclusive Indo-Pacific region.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1749126>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 26 Aug 2021 9:44AM

भारतीय नौसेना ने मालाबार नौसैन्य अभ्यास में भाग लिया

भारत की नौसेना अमेरिकी नौसेना (यूएसएन), जापान के समुद्री आत्मरक्षा बल (जेएमएसडीएफ) और रॉयल ऑस्ट्रेलियाई नौसेना (आरएएन) के साथ 26 से 29 अगस्त 2021 तक मालाबार अभ्यास 2021 के समुद्री चरण में भाग ले रही है।

समुद्री नौसैन्य अभ्यास की मालाबार श्रृंखला वर्ष 1992 में आईएन-यूएसएन अभ्यास के रूप में शुरू हुई थी। वहीं 2015 में, जापानी समुद्री आत्मरक्षा बल मालाबार अभ्यास में एक स्थायी सदस्य के रूप में शामिल हो गया। वर्ष 2020 के अभ्यास संस्करण में रॉयल ऑस्ट्रेलियाई नौसेना ने भी इसमें हिस्सा लिया। इस वर्ष मालाबार नौसैन्य अभ्यास का 25वां संस्करण है, जिसकी मेजबानी अमेरिकी नौसेना (यूएसएन) द्वारा पश्चिमी प्रशांत क्षेत्र में की जा रही है।

भारतीय नौसेना के आईएनएस शिवालिक और आईएनएस कदमत तथा पी8आई गश्ती विमान इस अभ्यास में भाग ले रहे हैं, जिनका नेतृत्व फ्लैग ऑफिसर कमांडिंग ईस्टर्न फ्लीट रियर एडमिरल तरुण सोबती, वीएसएम कर रहे हैं। अमेरिकी नौसेना का प्रतिनिधित्व यूएसएस बैरी, यूएसएनएस रम्पाहनाक, यूएसएनएस बिग हॉर्न और पी8ए गश्ती विमान के द्वारा किया जाएगा। जापानी समुद्री आत्मरक्षा बल की एक पनडुब्बी और पी1 गश्ती विमान के अलावा जेएस कागा, मुरासामे और शिरानुई इस नौसैन्य अभ्यास में हिस्सा लेंगे, जबकि रॉयल ऑस्ट्रेलियाई नौसेना का प्रतिनिधित्व एचएमएएस वाररामुंगा द्वारा किया जाएगा।

भारतीय नौसेना के पोत गुआम से रवाना हुए जहां उन्होंने 21 से 24 अगस्त 2021 तक ऑपरेशनल टर्न अराउंड में भाग लिया। अभ्यास के इस चरण के दौरान फ्लैग ऑफिसर कमांडिंग-इन-चीफ, पूर्वी नौसेना कमान वाइस एडमिरल एबी सिंह, एवीएसएम, वीएसएम ने अमेरिकी नौसेना में अपने समकक्षों के साथ विचारों का आदान-प्रदान किया।

मालाबार-21 में सतह रोधी, वायु रोधी और पनडुब्बी रोधी युद्ध अभ्यास और अन्य सैन्य व्यूह अभ्यास तथा सामरिक अभ्यास सहित कई जटिल अभ्यास किये जायेंगे। इस नौसैन्य अभ्यास में भाग लेने वाली नौसेनाओं को एक दूसरे की विशेषज्ञता एवं अनुभवों से लाभ प्राप्त करने का अवसर मिलेगा।

कोविड -19 वैश्विक महामारी के दौरान स्वास्थ्य प्रोटोकॉल का पालन करते हुए अभ्यास का संचालन, भाग लेने वाली नौसेनाओं और एक स्वतंत्र, खुले तथा समावेशी हिंद-प्रशांत क्षेत्र के लिए हमारे साझा दृष्टिकोण के बीच तालमेल का प्रमाण है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1749159>

Chief of Defence Staff General Bipin Rawat expresses concern about 'terror activity' spilling into India with Taliban taking over Afghanistan

By Anando Bhakto

In a major development, India issued its first overtly critical comments against the Taliban with the Chief of Defence Staff General Bipin Rawat saying on August 25, "It is the same Taliban that was there 20 years ago."

General Rawat said with Taliban seizing control of Afghanistan, terror activity from that country could spill over to India. He said that India was prepared for that eventuality.

General Rawat made the comments at an event organised by Observer Research Foundation, a private think tank. The event was attended by Admiral John C. Aquilino, Commander of the United States' Indo-Pacific Command.

General Rawat said that while the ascent of Taliban was anticipated, the pace was faster than imagined. He said India expected the Taliban to capture Kabul two months down the line.

He said: "Everything that has happened was something that had been anticipated. Only the timelines have changed.... From the Indian perspective, we were anticipating a Taliban takeover of Afghanistan. We were concerned about how the terrorist activity from Afghanistan could overflow into India. To that extent our contingency planning had been ongoing and we are prepared for that."

General Rawat was forthcoming on how the Taliban was being viewed in the power corridors. "It is pretty much the same. It is the same Taliban that was there 20 years ago. "News reports and reports from expats who have come from there are all telling us the kind of activities that the Taliban are into. All that has happened is that the partners have now changed. It is the same Taliban with different partners."

General Rawat's comment is a departure from the carefully worded statements from Indian officials so far, who had been expressing concern about the situation and the potential threats that can come from Afghanistan, but had been loath to condemn the Taliban directly.

<https://frontline.thehindu.com/dispatches/chief-of-defence-staff-general-bipin-rawat-expresses-concern-about-terror-activity-spilling-into-india-with-taliban-taking-over-afghanistan/article36114503.ece>



Indian Navy's new amphibious ships to be packed with UAVs, missiles, helicopters

The earlier price estimates for four new LPDs was in the range of \$2 billion

The Indian Ocean tsunami in late 2004 was a watershed for the Indian Navy. It prompted the launch of the largest humanitarian assistance and disaster relief (HADR) mission the Indian Navy had embarked on until that point. Indian Navy ships carried supplies to Sri Lanka, Indonesia and Maldives, but the tsunami response exposed a chronic shortcoming: India lacked amphibious assault ships that were optimal for ferrying men and material in the event of natural disasters.



A Mistral class LPD of French Navy | Simon Ghesquiere/Marine Nationale via Wikipedia Commons

When not carrying helicopters and battle tanks to attack an enemy's coasts, modern large amphibious ships can carry humanitarian aid and even act as floating hospitals in the event of earthquakes, tsunamis and other natural disasters.

A landing helicopter dock (LHD) is a type of amphibious assault warship that can deploy troops and even tanks via helicopters and small landing craft stored inside its deck. At the time of the 2004 tsunami, the Indian Navy's largest ships for amphibious assault were tank landing ships, which are significantly smaller and less versatile than LPDs. In 2007, the Indian Navy inducted INS Jalashwa, an amphibious assault vessel that had been in service with the US Navy.

Earlier this week, the Indian Navy renewed its search for a new class of amphibious assault warships. The Indian Navy issued requests for information from Indian shipyards to buy four LPDs. This is not the first time the Indian Navy has sought to buy LPDs since 2004. The Indian Navy had first floated requirements to build LPDs nearly a decade ago. The Indian Navy issued 'request for proposals' for the LPD project in 2011, but the project floundered, partially on account of financial difficulties on part of Indian shipyards partnering with foreign designers. In October 2020, the Indian Navy scrapped a tender to build four LPDs; the tender was issued in 2013. The tender was scrapped as the Indian Navy's requirements for the LPDs had changed. Each of the ships were likely to be in the range of 30,000 and 40,000 tonnes.

The earlier price estimates for four new LPDs was in the range of \$2 billion.

The RFI document sets out ambitious specifications for the LPDs. In addition to transporting troops and equipment to shore, the Indian Navy wants that its future LPDs should be able to act as "mother ship for unmanned capability and to support operation/exploitation of all dimensions of futuristic unmanned vehicles/platforms/equipment". The Indian Navy RFI also envisages the ships should be capable of acting as a hospital ship during humanitarian operations, including having an operation theatre and dental facility.

The Indian Navy RFI specifies the LPDs should have a maximum length of around 200 metres and be capable of embarking 900 troops. Surprisingly, the Indian Navy has specified that the LPDs should be able to carry 16 surface-to-surface missiles; amphibious assault ships in western navies typically carry little offensive armament of their own.

The RFI specifies the LPDs should have 32 short-range surface-to-air missiles to defend against enemy attack and must be capable of carrying a 'directed energy weapon' to replace fast-firing guns. Directed-energy weapons typically refer to lasers and microwaves that can be used to destroy the guidance seekers of missiles and UAVs.

The Indian Navy intends that the future LPDs should carry a heavy load of battle tanks. The RFI states the ship's vehicle carriage capacity "should be adequate to embark at least six Main Battle

Tanks (MBT), 20 AAVs/ BMP Class armoured vehicles and approx 60 heavy trucks (or a suitable combination of an equivalent number of trucks and light motor vehicles) at one time”.

These vehicles would be transported to shore using smaller amphibious craft that are deployed from the LPD's dock. The Indian Navy wants the future LPD to carry up to 14 helicopters (two heavy-lift choppers and 12 'special operations' helicopters. Special operations helicopters are typically used to carry soldiers and light cargo to battlefields, while heavy-lift helicopters carry heavier equipment, such as trucks and missile systems.

The RFI specifies the LPD be capable of embarking a range of unmanned systems for operation on the sea surface, underwater and air.

Companies in France, Spain and the US have previously offered LPD designs to India. The new RFI comes at a time when China is introducing a new class of LPDs, which displaces about 40,000 tonnes and can carry large numbers of personnel, helicopters and tanks.

<https://www.theweek.in/news/india/2021/08/26/indian-navy-new-amphibious-ships-to-be-packed-with-uavs-missiles-helicopters.html>

THE ECONOMIC TIMES

Fri, 27 Aug 2021

India needs to work on suitable format for new Theatre Commands: Ex-Army Chief Shankar Roychowdhury

Synopsis

India wants to implement a theatre command structure to bring about better synergy between the three services -- army, navy and air force -- where there would be four to five unified commands instead of some 17 different ones.

Strategic planners in India need to work out a suitable format before implementing the Theatre Command structure, which integrates all services in an area under a unified command, said former army chief General Shankar Roychowdhury.

India also needs to build up its strength vis-a-vis China and not be "over-influenced" by the 1962 border war with the neighbouring country, the former army chief stated.

"We need to work out a suitable format for the Theatre Command structure through discussions within the three services... there is a need for clarity on the structure," Gen. Roychowdhury told PTI. "For instance, the theatre command structure for peninsular India, which abuts the sea, and landlocked northern India have to be different," said the former cavalry officer, who currently heads a strategic think tank, Research Centre for Eastern and North-eastern Studies.

India wants to implement a theatre command structure to bring about better synergy between the three services -- army, navy and air force -- where there would be four to five unified commands instead of some 17 different ones.

China, considered as India's single-most important security threat by many defence analysts, has a theatre command system, and its western command with headquarters at Chengdu integrating the army, air and nuclear forces is the one which India faces on its northern borders.

Gen. Roychowdhury, who served as chairman of the Chief of Staff Committee in the late 1990s, pointed out that while many countries including the US and China have implemented the Theatre Command concept, "user-reports at ground level have not always been favourable".

He said there is a need to study the systems and decide what would suit Indian conditions.

The current chief of defence staff Gen. Bipin Rawat has held a number of marathon meetings with the three services on implementing Theatre Commands. However, objections from the Indian air force have held up the implementation of the concept up until now.

India currently has two joint services commands -- the Andaman & Nicobar Command and the strategic forces command that controls the country's nuclear weapon systems including missiles.

Gen. Roychowdhury said there is a need to build up India's military strength not just to face up to possible threats from terror groups but also China. "We have to try and achieve the level China has achieved," he said.

Speaking of the 1962 border war with China where Indian troops had faced severe reverses in the northeast and Ladakh-Aksai Chin, the former Army chief said the nation should not allow its strategic thinking to be "over-influenced by our showing in 1962".

Indian troops retreated from positions held by them south of Namka Chu river, including Tawang, after several skirmishes, while pitched battles in Ladakh-Aksai Chin sector saw many pickets being overwhelmed after a bitter fight. As the harsh winter set-in, Chinese troops pulled out from areas they had entered, fearing that heavy snowfall would disrupt supplies.

He pointed out that Indian forces were in a far better place in terms of equipment, morale and logistics and advised that the country needs to "speak from a position of restrained strength" while dealing with its neighbours including China.

<https://economictimes.indiatimes.com/news/defence/india-needs-to-work-on-suitable-format-for-new-theatre-commands-ex-army-chief-shankar-roychowdhury/articleshow/85653678.cms>

THE TIMES OF INDIA

Fri, 27 Aug 2021

Vintage aircraft museum: UT, IAF to sign pact today

By Rajinder Nagarkoti

Chandigarh: The Chandigarh administration will sign a memorandum of understanding (MoU) with the Indian Air Force (IAF) for setting up a vintage aircraft museum at Government Press Building, Sector 18, on August 27.

The IAF plans to showcase its vintage aircraft, armaments and memorabilia from different wars, including 1971 India-Pak and Kargil wars, at the museum. There will also be a flight simulator. Vintage aircraft like Dakota and Spitfire will also be exhibited. There will also be audio-video galleries and a space for showcasing documentaries related to the IAF history, a senior UT official said. The IAF will design the museum, for which it will hire a consultant.

The number and type of vintage aircraft will be selected by the air force depending upon the space and design, added the UT official. The museum will bring greater awareness in the region, particularly among children, about the role and contribution of the IAF.

After closing down the building in 2019, the UT administration had decided to set up a vintage car museum there. After it failed to get any response even after floating tenders twice, it was decided to convert the building into an IAF vintage museum.

No takers for vintage car museum

After shutting down the government printing press in 2019, the UT had decided to house a vintage car museum there, a dream project of administrator VP Singh Badnore. Later, the administration decided to also set up a heritage furniture museum on one of the floors. Another section was planned for organising auction of the spare heritage furniture items. After failing to get any response to tenders floated to invite firms to establish the museum, the administration decided to convert it into an IAF vintage museum.

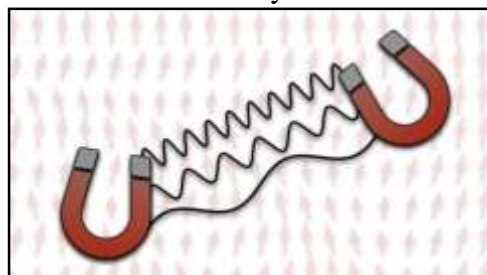
<https://timesofindia.indiatimes.com/city/chandigarh/vintage-aircraft-museum-ut-iaf-to-sign-pact-today/articleshow/85668560.cms>



Fri, 27 Aug 2021

Discovery of fastest ever magnetic wave propagation

Like light waves, magnetic waves move through materials at a fixed maximum velocity. However, at the smallest possible length scale (nanometres) and the shortest possible time scale (femtoseconds), magnetism behaves differently. Physicists at Radboud University have discovered that magnetic waves with very short wavelengths can propagate up to 40% faster than previously thought. This supermagnonic propagation offers opportunities for even faster, smaller and more energy-efficient ways of data processing in future computers. The research will be published in *Physical Review Letters* on 25 August.



Credit: Radboud University

"The concept is comparable to supersonic aircrafts, which move faster than the maximum speed of sound waves. We therefore call these fastest magnetic waves supermagnonic," explains physicist Johan Mentink. Thanks to a new theoretical methodology inspired by machine learning, the researchers managed to perform calculations on two-dimensional magnets. These calculations revealed that the smallest magnetic waves can travel up to 40% faster than the maximum propagation speed. "Thanks to the machine learning simulations by colleague Giammarco Fabiani and the analytical calculations by Master's student Martijn Bouman, we now understand why these supermagnonic magnetic waves can exist."

Faster, more energy efficient and smaller

In today's computers, information is transferred from A to B by electrons. However, the speed of this information transfer has its limits. In addition, there is an energy loss due to the resistance electrons experience along the way. Alternatively, light pulses can be used for information transfer, as is done in fiber internet, for example. Information transfer using light is faster and more energy efficient.

Faster, more energy efficient and smaller

"However, our objective lies beyond that," Johan Mentink says. "We are looking for a way to make data transfer faster, more energy-efficient and smaller. Light waves are fast, but the wavelength of light is quite long. In order to find smaller solutions, we will have to look at shorter waves: like magnetic waves, for example."

Being faster, smaller and more efficient is vital for future computers. Consider, for example, the huge data centers in our country that already today use a significant part of our power grid's capacity: this consumption will only increase in the future. Johan Mentink: "Our research has shown that, in theory, data transfer using supermagnonic motion can be even faster than was thought possible. However, we do not yet know exactly how magnetism works at the smallest length scales and shortest time scales. In order to eventually use magnetism for data processing in practice, we must first understand the underlying fundamental physics. This research pushes the boundaries of our knowledge and takes us one step closer."

More information: G. Fabiani et al, Supermagnonic Propagation in Two-Dimensional Antiferromagnets, *Physical Review Letters* (2021). [DOI: 10.1103/PhysRevLett.127.097202](https://doi.org/10.1103/PhysRevLett.127.097202)

Journal information: [Physical Review Letters](https://phys.org/news/2021-08-discovery-fastest-magnetic-propagation.html)

<https://phys.org/news/2021-08-discovery-fastest-magnetic-propagation.html>

Development of Cd-free quantum dot synthesis technology

Prof. Jong-Soo Lee and his research team from the Department of Energy Science & Engineering, DGIST, developed a green-emitting Cd-Free quantum dot synthesis technology with high color reproduction rate. The newly developed quantum dot material is expected to be used in various photoelectric devices, including next-generation displays such as AR/VR.

Quantum dots (QDs) are nano-sized semiconductor nanoparticles that are as small as ten-thousandth the size of a human hair. In particular, it has a high color reproduction performance and reproduces natural colors, making it suitable for its application in high dynamic range (HDR), which is used in ultra-high definition displays. Moreover, the material has higher color purity and photostability than other luminescent materials, emerging as the new material for various photoelectric devices, including next-generation displays.

The color reproduction performance of QDs improves as the full width at half-maximum (FWHM) of the light-emitting wavelength of QD becomes smaller. Moreover, before the development of the proposed technology, the technical limit on the FWHM of photoluminescent (PL) peaks for the green-emitting Cd-Free QDs was 35nm.

Prof. Jong-Soo Lee and his team used a heat-up process to optimize the synthesis of InP-based QDs, and used zinc chloride (ZnCl₂) and octanol(1-Octanol) for the stabilization of QD surface and succeeded in reducing the FWHM of QD PL peaks to less than 33nm.

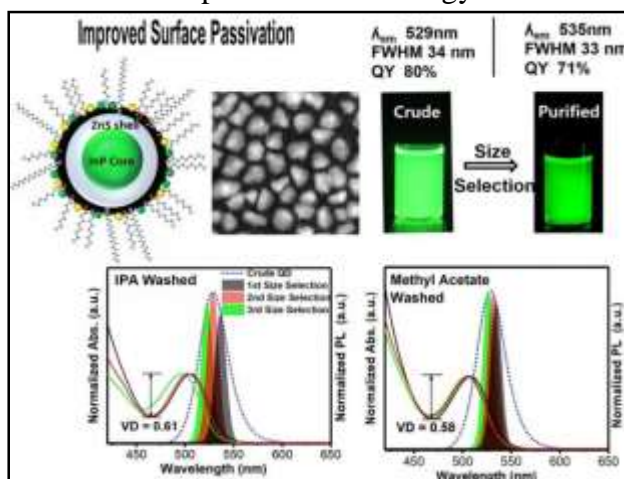
In addition to achieving 80% quantum efficiency (QE), the research team also succeeded in securing the same level of stability as the existing QDs, which helped in solving the problem of quantum efficiency losses and reduction in stabilization.

Prof. Lee said, "The study proved that Cd-Free quantum dots can have FWHM of PL peaks smaller than 30nm, which was known as the technical limit before the introduction of proposed technology. Through follow-up studies, we hope to develop eco-friendly QDs with FWHM of PL peaks less than 30 nm as well as QE close to 100%, thus contributing to the next-generation displays and related industries."

Meanwhile, the research was supported by Mid-career Researchers Support Project funded by the National Research Foundation of Korea and by the research team of Hyper-connected Future Device Valleytronics, Pre-CoE Project, DGIST. The work was published in the *Chemistry of Materials*.

More information: Derrick Allan Taylor et al, Importance of Surface Functionalization and Purification for Narrow FWHM and Bright Green-Emitting InP Core–Multishell Quantum Dots via a Two-Step Growth Process, *Chemistry of Materials* (2021). DOI: [10.1021/acs.chemmater.1c00348](https://doi.org/10.1021/acs.chemmater.1c00348)

Journal information: [Chemistry of Materials](https://chemmater.org)
<https://phys.org/news/2021-08-cd-free-quantum-dot-synthesis-technology.html>



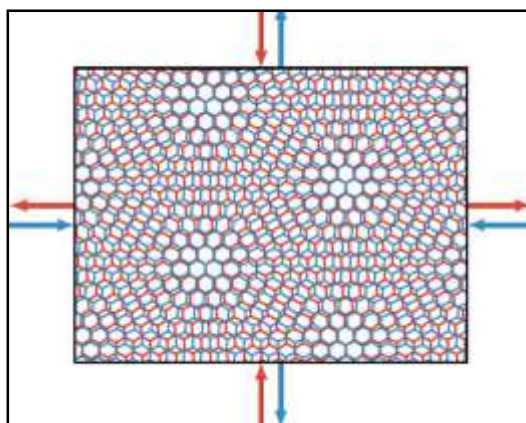
Quantum dot synthesis of an Indium phosphide core-shell with high color purity. Credit: Chemistry of Materials

Study unveils strain-induced quantum phase transitions in magic-angle graphene

By Ingrid Fadelli

Over the past few years, many physicists and material scientists worldwide have been investigating the properties and characteristics of magic-angle twisted bilayer graphene (MATBG). MATBG is a strongly correlated material that was first experimentally realized in 2018. This unique material hosts a diverse array of highly correlated phases, including metals, semimetals, Chern insulators, quantum anomalous hall states and, perhaps most interestingly, superconductivity.

Researchers at University of California, Berkeley (UC Berkeley) have recently carried out a study investigating the effects of uniaxial heterostrain on the interacting phase diagram of MATBG. Their findings, published in *Physical Review Letters*, suggest that small strain values led to a zero-temperature phase transition between two states, namely the symmetry-broken Kramers intervalley-coherent insulator and nematic semimetal phases.



A schematic figure of twisted bilayer graphene under strain (we use unrealistic strain parameters to exaggerate strain). Credit: Parker et al.

"A key goal of our field is to understand the origin of superconductivity in MATBG and flesh out the mechanism responsible," Daniel Parker and Tomo Soejima, two of the researchers who carried out the study, told Phys.org via email. "However, there is an important puzzle of the MATBG phase diagram, which complicates any attempt to divine the nature of the superconductivity, namely at charge neutrality, some experiments find a semimetallic state, while other see insulators. Our work proposes that a particular phase transition may resolve this discrepancy."

All actions and changes in MATBG occur in what are known as its active bands. These bands include 2 Chern bands, times 2 valleys and times 2 spins, for a total of 8. Scientists can easily adjust the number of electrons in the system experimentally, which in turn allows them to tune these bands from all empty to all full.

"As an analogy, one can think of this like having 8 buckets that can be filled with water," Parker explained. "For a given amount of water, the MATBG picks out one, and only one, way to distribute the water. For instance, if there are two buckets worth of water, then MATBG might choose to fill 2 buckets full to the brim, or to fill 4 buckets each halfway. The phase of the system is labeled by two things: 1. how the water (electrons) is distributed in the buckets (bands) and 2. how hard is it to add one more drop of water (i.e., whether the system is insulating or conducting)."

While the insulating or conducting nature of a system is fairly easy to infer experimentally, the distribution of electrons in the bands of MATBG is much harder to determine. In their paper, Parker, Soejima and their colleagues wanted to explore what happens when the number of electrons is such that it cancels the charge of carbon atoms (known as the charge neutrality point) or, when considering the water buckets analogy, if buckets are halfway filled with water.

While some past studies investigating this have observed insulating states (i.e., where it is hard to add "one more drop"), others have observed metals or semimetallic states instead. From a theoretical standpoint, previous work by Nick Bultinck and his collaborators suggests that the insulating state could be a Kramers-intervalley coherent (KIVC) state. To explain this using the

water bucket analogy, it would be as if all buckets were filled halfway, but they were strangely paired up with one partner filled only on the left half and the other filled only on the right.

"Further work by Bultinck and his colleagues showed that this state is one possible origin for superconductivity in MATBG," Parker and Soejima said. "The alternative semimetallic phase is much more conventional, where the bottom half of each bucket is filled. The primary question we sought to answer was why, when previous theory predicted a KIVC state, one might observe the semimetal instead."

A possible reason for the discrepancies in past observations is that different devices have slightly different Hamiltonians. Some teams were able to use a simplified model of MATBG, first introduced by Bistrizter and McDonald, to investigate the properties of MATBG samples.

Recent studies, however, revealed that in its original form, the so-called BM model, does not capture non-local tunneling present in DFT, alignment with hBN substrate, and renormalization of free-fermion bandstructure, and other effects. Parker, Soejima and their colleagues thus wanted to determine what effect could be considered to explain the observed discrepancy.

"Bultinck had a shrewd suspicion that strain might be the culprit responsible for this discrepancy," Parker and Soejima said. "While a realistic way to model strain in MATBG had already been proposed and its effect on non-interacting band structure (i.e., solution of the Hamiltonian without Coulomb interaction) had been investigated, its effect on the phase diagram in the presence of interaction had not been investigated so far."

To test the hypothesis introduced by Bultinck, the researchers used two complementary numerical techniques, known as self-consistent Hartree-Fock (HF) and density-matrix renormalization group (DMRG). Hartree-Fock is a standard approximation that incorporates the most important effects of electron-electron interactions. This approximation is highly flexible; thus, it allows researchers to examine large system sizes of 24 x 24-unit cells.

"Since HF is an approximation, there is always the scary possibility that it is producing a 'false' phase," Parker and Soejima said "We thus used DMRG to rule this out. DMRG is an unbiased numerical technique which, with sufficient computational power, will determine the true phase of the system. Using it for 2D systems with long-range interactions as we have here is non-trivial, and requires special techniques developed by us in an earlier paper."

Compared to HF approximation, DMRG is slower, more expensive and can only be used to examine small systems. To achieve reliable results, Parker, Soejima and their colleagues thus decided to use HF and DMRG in tandem, as HF allowed them to map out the entire phase diagram and DMRG to verify that the HF approximation was correct.

"The key finding of our work is that small amounts of heterostrain (precisely in the $\epsilon \sim 0.1\% - 0.2\%$ range) can destroy the KIVC phase and replace it with a semimetal," Parker and Soejima said. "Any sheet of graphene made in the lab is always under some stress, which compresses it in one direction while stretching it in the other. In MATBG, one has the additional possibility of heterostrain, where the top layer is compressed along stretching axis of the bottom layer, and vice versa."

In the past, some researchers carried out experiments measuring the heterostrain present in MATBG samples and found that it was tiny, ranging between 0.1% - 0.7%. When Parker, Soejima, and their colleagues first started exploring this topic, they were fairly skeptical that such a small amount of strain would have particular effects, thus their results came as a surprise to them.

"One implication of our findings is that strain is an important parameter to characterize experimentally," Parker and Soejima said. "The experimentalists making and measuring twisted bilayer graphene do an incredible job juggling and controlling many sources of errors. Eliminating such a small amount of strain is probably terribly tricky, but we suspect someone will work out a way to do it sooner or later."

Overall, the findings suggest that strain is an important 'turning knob' in MATBG as it can elicit phase transitions, thus it should be measured and characterized whenever possible. This

observation could have important implications for future research in materials science, as it could help to improve the performance of twisted bilayer graphene.

"Our next goal is to understand the origin of superconductivity in magic-angle graphene," Parker and Soejima said. "One intriguing proposal is that it may be mediated by quasiparticles called Skyrmions instead of the standard phonons. If this is indeed the case, we hope to confirm it by extending the tools used in this work."

More information: Strain-induced quantum phase transitions in magic-angle graphene. *Physical Review Letters*(2021). [DOI: 10.1103/PhysRevLett.127.027601](https://doi.org/10.1103/PhysRevLett.127.027601).

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Journal information: [Physical Review Letters](#) , [Science Advances](#) , [Physical Review X](#) , [Physical Review B](#)
<https://phys.org/news/2021-08-unveils-strain-induced-quantum-phase-transitions.html>

COVID-19 Research News

The Indian EXPRESS

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Explained: Has Covid-19 become endemic in India?

According to the US Centers of Disease Control and Prevention (CDC), endemic refers to the “constant presence and/or usual prevalence of a disease or infectious agent in a population within a geographic area”

New Delhi: World Health Organisation Chief Scientist Dr Soumya Swaminathan recently said that COVID-19 may be entering a stage where it will become endemic, which means that some people will get infected but the levels at which it will circulate will be low to moderate.

Swaminathan said this during an interview she gave to news website The Wire, in which she said that it was “very very feasible” that the situation may continue like what it is now, with ups and downs in disease levels in different parts of the country, depending upon the natural immunity and vaccine coverage in particular areas.



At a special Covid-19 test camp in Ahmedabad. (Express photo: Nirmal Harindran)

When does a disease become endemic?

According to the US Centers of Disease Control and Prevention (CDC), endemic refers to the “constant presence and/or usual prevalence of a disease or infectious agent in a population within a geographic area”.

According to an article published in the journal Science in 2020, when epidemics become endemic, they become “increasingly tolerated” and the responsibility of protecting against it shifts from the government to the individual.

An epidemic, on the other hand, refers to a scenario when the number of cases of the disease increases, often suddenly, which means the cases are more than the expected levels. For some rare diseases such as polio, plague and rabies even a single case can warrant investigation from health authorities.

Notably, the number of cases of a disease that are considered “constant” would be different for different areas and would also depend on the particular geographical area’s population. For instance, if 200 cases per day are considered endemic in country A that has a population of say, 200 million, the same will not be considered endemic for country B, that has a much smaller population at, say, 20 million.

What does this mean for India and the world?

Out of the seven coronaviruses known to infect humans, the ones that have emerged since the last two decades including SARS (fatality rate of 10 per cent), MERS (fatality rate between 35-36 per cent) and now SARS-CoV-2 are the ones that are a cause for worry since they are capable of causing severe illnesses and even deaths.

Out of these three, while humans are still dealing with SARS-CoV-2 and are likely to continue doing so in the coming few years, SARS (emerged in China) and MERS (emerged in Saudi Arabia) were locally contained. The last case of SARS was detected in 2003, however, MERS is still circulating.

A modelling study published by Science magazine earlier this year said that in a few years, SARS-CoV-2 may be no more virulent than the common cold, much like other benign human coronaviruses that are currently circulating in the population and do not cause severe illness.

It is not in the interest of a pathogen such as SARS-CoV-2 to become so severe that it kills all its hosts. In other words, the virus needs a host to survive, in the present case, it requires a human host to sustain its own survival, therefore as more people get infected or get vaccinated, the virus should become less life threatening, but it will still keep infecting people.

What are some factors endemicity may depend on?

It is difficult to predict when exactly will Covid-19 become endemic in India or the world. With the vaccination rollout underway and more people getting infected each day, some proportion of the people have either developed natural immunity, they either have vaccine-induced immunity or a combination of both.

As per WHO’s Covid-19 dashboard, as of August 25, there were 213,050,725 confirmed cases of the disease the world over since the start of the outbreak in 2020. The world over, some 5 billion doses of vaccines have been administered, but this is far less than what is required to fully vaccinate the global population of more than 7 billion people.

Further, most of the 5 billion doses have been administered in richer countries, which means low-income countries are far behind, partly because they are dependent on receiving vaccine imports, from programmes such as COVAX.

As per Our World in Data, as of August 26, 33 per cent of the world population has received at least one dose of a Covid-19 vaccine, and 25 per cent is fully vaccinated. 5.08 billion doses have been administered globally, and 33.85 million are now administered each day. Only 1.4 per cent of people in low-income countries have received at least one dose.

But there are supply-side constraints, which means vaccine supplies are definitely not adequate for the world’s population and even if they were, some people are hesitant to get vaccinated.

<https://indianexpress.com/article/explained/covid-19-endemic-india-7472143/>

