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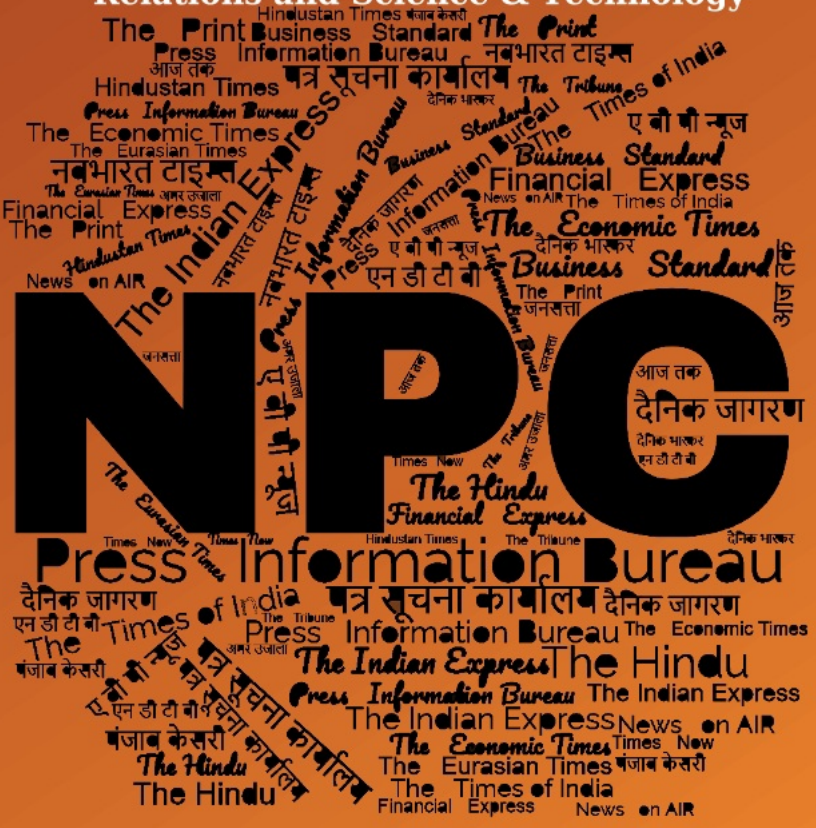
समाचार पत्रों के चयनित अंश
Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



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DRDO News

सुदर्शन NEWS

Tue, 26 Nov 2024

DRDO और IIT दिल्ली ने किया क्वांटम कम्युनिकेशन टेक्नोलॉजी का प्रदर्शन

DRDO इंडस्ट्री एकेडेमिया सेंटर ऑफ एक्सीलेंस (DIA–CoE) और IIT दिल्ली ने आज यानी मंगलवार को नई दिल्ली में विभिन्न क्वांटम कम्युनिकेशन तकनीकों का प्रदर्शन किया। इस पहल के तहत, क्वांटम कुंजी वितरण (Quantum Key Distribution – QKD) तकनीक को 50 किमी फाइबर लिंक पर और 8 किमी ऑप्टिकल फाइबर पर सफलता पूर्वक परीक्षण किया गया। यह प्रौद्योगिकी सुरक्षित और मजबूत संचार के लिए एक महत्वपूर्ण कदम है।

फ्री–स्पेस एंटैंगलमेंट वितरण का सफल परीक्षण

फ्री–स्पेस एंटैंगलमेंट वितरण का प्रदर्शन BBM–92 प्रोटोकॉल के तहत किया गया। यह परीक्षण दो तालिकाओं के बीच 20 मीटर की दूरी पर और खुले वातावरण में 80 मीटर तक किया गया। इस तकनीक ने कम दूरी के फ्री–स्पेस सेटअप में क्वांटम संचार की संभावनाएं प्रदर्शित कीं।

हाइब्रिड एंटैंगलमेंट और मल्टी–चैनल QKD तकनीक

एक अन्य प्रयोग में, फ्री–स्पेस वातावरण में हाइब्रिड एंटैंगलमेंट का प्रदर्शन किया गया, जिसमें 10 मीटर की दूरी पर लगभग 6% क्वांटम बिट एरर रेट (QBER) प्राप्त हुई। इसके साथ ही, एकल स्रोत से संचालित मल्टी–चैनल QKD सिस्टम का परीक्षण किया गया, जो बहु–प्रोटोकॉल क्वांटम संचार प्रणालियों के विकास के लिए संभावनाएं खोलता है।

सिंगल–फोटॉन और एंटैंगल्ड फोटॉन स्रोत का विकास

सुरक्षित क्वांटम संचार के लिए महत्वपूर्ण सिंगल–फोटॉन जनरेशन हेतु ऑल–फाइबर हेराल्डेड फोटॉन स्रोत विकसित किया गया, जिसकी दूसरी ऑर्डर सहसंबंध ($g^2 \sim 0.01$) सैकड़ों kHz तक है। इसके अलावा, उच्च दृश्यता के साथ एक ऑल–फाइबर एंटैंगल्ड फोटॉन स्रोत विकसित किया गया, जिसका बेल टेस्ट पैरामीटर 2.6 से अधिक है।

स्वदेशीकरण और भविष्य की योजनाएं

क्वांटम स्रोतों और डिटेक्टरों जैसे सिंगल–फोटॉन स्रोत, SNSPD और नॉन–लीनियर क्रिस्टल के स्वदेशीकरण की पहल भी शुरू की गई है। ये परियोजनाएं आईआईटी दिल्ली और डीआरडीओ लैब्स (DYSL–QT, SSPL) के सहयोग से चल रही हैं और रक्षा प्रौद्योगिकी में नवाचार बढ़ाने के उद्देश्य से फंडिंग की जा रही हैं।

क्वांटम संचार: सुरक्षा के लिए बड़ा कदम

डीआरडीओ और आईआईटी दिल्ली के सहयोग से, फाइबर और फ्री–स्पेस क्षेत्रों में QKD तकनीक में कई उपलब्धियां हासिल की गई हैं। यह तकनीक रक्षा और वित्त जैसे रणनीतिक क्षेत्रों में सुरक्षा बढ़ाने के लिए महत्वपूर्ण संभावनाएं रखती है।

https://www.sudarshannews.in/news-detail.aspx?id=118993

Press Information Bureau
Government of India

Ministry of Defence

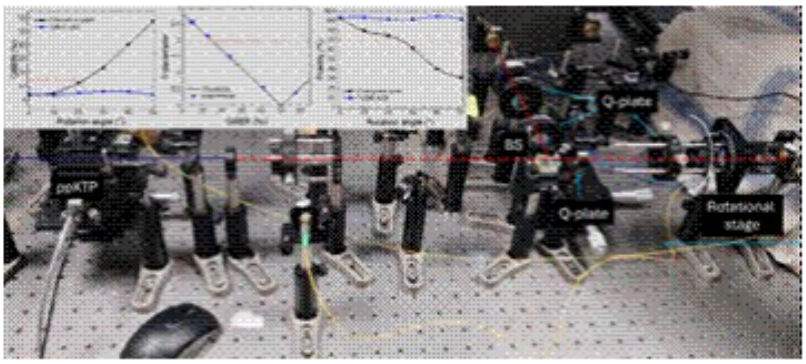
Tue, 26 Nov 2024

DRDO and IIT Delhi organise demonstration of various Quantum Communication Technologies

The DRDO Industry Academia–Centre of Excellence (DIA-CoE), IIT Delhi demonstrated quantum communications technologies in New Delhi. It has been developed by their collaborative initiative of the entanglement based quantum key distribution approaches for robust and secure communication, demonstrating entanglement distribution and quantum key distribution (QKD) over a 50 km fiber link in laboratory. A separate field test has demonstrated entanglement distribution and QKD over 8 km of optical fiber in IIT Delhi campus.

In another initiative of quantum research, Free-space Entanglement distribution was demonstrated using the BBM-92 protocol, a key QKD method, between two tables separated by 20 meters in the lab and 80m in the open space. This experiment demonstrated short-range quantum communication in a free-space setup.

In an innovative experiment, Hybrid entanglement has been demonstrated in a free-space environment, achieving a Quantum Bit Error Rate (QBER) of around 6% in the laboratory over a distance of 10m in the lab. In addition, QKD systems supporting multiple independent channels driven by a single source are also being explored with promising results. These open the door for more flexible, multi-protocol quantum communication systems.

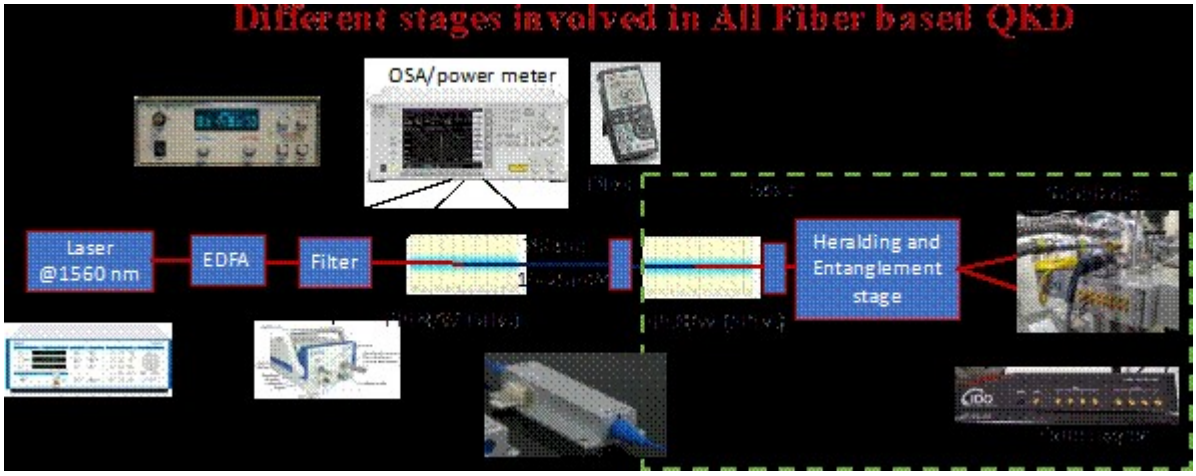


Hybrid Photon based Free-space Quantum Key Distribution Testbed

In achieving the above breakthrough, an all-fiber heralded photon source with second-order correlation function ($g^2 \sim 0.01$) at rates reaching hundreds of kHz is developed. This innovation is vital for single-photon generation, a critical requirement for secure quantum communication. An all-fiber entangled photon source has also been developed with high visibility. The Bell test parameter for this source is more than 2.6, exhibiting strong quantum entanglement, which is essential for protocols like BBM-92.

For free space quantum communication experiments, Free-space heralded single photon source has been demonstrated with a heralding rate of over 4 million counts/sec. This development enables robust free-space quantum communication.

Following India's First Quantum Key Distribution (QKD) demonstration between the cities of Prayagraj and Vindhyachal, separated by 100 km, by DRDO labs and IIT (D) in February 2022, many new initiatives have been taken by DRDO and IIT (D).



In addition, indigenisation of various components like quantum sources and detectors are initiated. These include single photon sources on LNOI, SNSPD and periodically poled non-linear crystals. These projects are launched at IIT Delhi in collaboration with DRDO labs like DYSL-QT and SSPL and are funded by Directorate of Futuristic Technology Management under its deep tech initiatives aimed at fostering cutting-edge innovations in defence technology.

Through its projects at the DIA-CoE, IITD, DRDO have created a strong national foot-print in QKD with breakthroughs in fibre and free space areas. Quantum communication holds significant potential for enhancing security in strategic sectors, such as defence and finance, by providing robust and tamper-evident communication channels.

The DRDO Industry Academia–Centre of Excellence (DIA-CoE) is a collaborative initiative between DRDO and IIT Delhi, established at IIT Delhi. The CoE is developing various quantum communication technologies like development of fibre and free-space (polarization/hybrid photon) based Quantum Key Distributions Technologies, Quantum Sources, Quantum Detectors and Non-linear Crystals.

https://pib.gov.in/PressReleasePage.aspx?PRID=2077600

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Tue, 26 Nov 2024

Army Chief General Upendra Dwivedi Ignites Passion And Vision Among Future Military Commanders at MILIT, Pune

The hallowed portals of Mehra Auditorium at Military Institute of Technology (MILIT), Girinagar, came alive with inspiration and purpose as General Upendra Dwivedi, Chief of the Army Staff (COAS), addressed the young military commanders and next generation leaders of the Indian Army undergoing training at the Defence Services Technical Staff Course (DSTSC), Pune. His dynamic presence and visionary words left an indelible impact on the student officers, energising them to embrace the challenges of modern warfare with unwavering resolve and unrelenting zeal.

In his impassioned address, General Dwivedi delved into the evolving landscape of warfare, emphasising the relentless pace of change and the need to stay ahead of the curve. The COAS spoke of defence preparedness as not just a requirement but an art, a symphony of strategy and precision. Highlighting the emerging threats and challenges as pertinent in Indian context, the COAS emphasised on ongoing transformational initiatives being undertaken by the Indian Army. He urged the officers to embody the spirit of versatility, adaptability and steely determination in line with the transformation drive.

The COAS took a moment to celebrate the Indian Army's monumental contributions to nation-building. He spoke with pride about its unmatched role in providing humanitarian aid during natural disasters, bringing solace and hope in times of despair. He also lauded the Army's courage in evacuating Indians from perilous conflict zones, showcasing a blend of tactical brilliance and human compassion.

Stressing the importance of military-diplomatic synergy, the Army Chief underscored the power of unity in countering external threats. Operational readiness, strategic alignment, and cohesive coordination, he said, were the bedrock of a formidable force. Calling for a seismic shift in military thinking, the COAS urged the officers to reimagine and reconstruct the tools and techniques of warfare.

The COAS commended MILIT for its illustrious role in shaping leaders not only for the Indian Armed Forces but also for Friendly Foreign Countries (FFCs). He praised MILIT as a beacon of excellence, a crucible where leaders of tomorrow are forged with intellect, character and purpose, inspiring both faculty and students.

Rear Admiral Nelson D'Souza, NM, Commandant, MILIT, expressed profound gratitude for the visit, stating that General Dwivedi's words have rekindled a sense of purpose and pride in directing staff and student officers, and will guide them to achieve greater heights, embodying the ethos of courage and commitment.

https://pib.gov.in/PressReleasePage.aspx?PRID=2077422

Press Information Bureau
Government of India

Ministry of Defence

Tue, 26 Nov 2024

3rd India-Tanzania Joint Defence Cooperation Committee meeting held in Goa to further expand bilateral ties

The third edition of Joint Defence Cooperation Committee (JDCC) meeting between India and Tanzania took place in Goa on November 26, 2024. During the meeting, the two sides discussed a wide range of areas of cooperation, including growing training partnership and service-to-service, maritime & defence industry collaboration. They also reviewed the progress on decisions taken during the previous JDCCs, and explored new areas to further expand bilateral defence cooperation.

The Indian delegation, led by Joint Secretary Shri Amitabh Prasad, included senior officials from the Ministry of Defence and the Armed Forces. The High Commissioner of India to Tanzania Shri Bishwadip Dey also attended the meeting. The Tanzanian delegation was led by Land Forces Commander Maj Gen Fadhil Omary Nondo.

As part of the tour, the Tanzanian delegation will visit Goa Shipyard Ltd to get first-hand experience of India's capabilities in port development and shipbuilding. The delegation is also scheduled to visit INS Hansa and National Institute of Hydrography in Goa.

India shares close, warm and friendly relations with Tanzania which are bolstered by robust capacity building & avenues for developing partnership. The two countries have a five-year roadmap to guide defence cooperation.

https://pib.gov.in/PressReleasePage.aspx?PRID=2077414

THE ECONOMIC TIMES

Tue, 26 Nov 2024

In race for mega Indian Navy deal, L&T, Navantia showcase AIP integration on Spanish submarine

Amid the ongoing Rs 70,000 crore deal for buying six new submarines, Indian Larsen and Toubro and its Spanish partner Navantia on Tuesday showcased the integration of the critical Air Independent Propulsion system on an under-construction Spanish Navy submarine.

The L&T and Navantia are partners for the Indian Navy's programme to buy six new AIP-fitted submarines, which can help the boats to stay underwater for at least up to three weeks. The other competitor in the contract is a combination of Indian Mazagaon Dockyards Limited and German firm ThyssenKrupp.

"We are offering a very capable AIP system to the Indian Navy, which is a state-of-the-art third-generation system. We are offering the system that is going to be used by the Spanish Navy and there will be no requirement for any reengineering. This is a very important aspect of our programme," Navantia's Chief of Commercial and Business Development Jose Manual Mondejar told ANI.

He said the Spanish-designed AIP system fulfils the requirements put by the Indian Navy on the AIP endurance; he said the Navantia AIP meets all requirements of the Indian Navy and the same system would be offered to be fitted in the Indian boats. The Indian Navy had carried out trials of the Spanish and German AIP systems in their respective facilities. In the contract, the Navy has already done its evaluation report and submitted it to the Defence Ministry.

The Defence Ministry has formed a Technical Oversight Committee to study the trial reports submitted by the Navy. The deal is expected to be completed in the near future after due diligence by the government.

https://economictimes.indiatimes.com/news/defence/in-race-for-mega-indian-navy-deal-lt-navantia-showcase-aip-integration-on-spanish-submarine/articleshow/115705278.cms

THE ECONOMIC TIMES

Wed, 27 Nov 2024

US struck Iran-aligned group's weapons storage facility in Syria: CENTCOM

The US military said Tuesday it conducted a strike against an unnamed Iranian-aligned group's weapons storage facility in Syria in response to an attack on American forces a day earlier.

The US Central Command (CENTCOM) wrote on X that the strike aimed to "degrade their ability to plan and launch future attacks on US and Coalition forces who are in the region to conduct D-ISIS operations," referring to a mission to target the Islamic State group. It said that there were no civilian casualties found during its assessment of the strike.

The US military has around 900 troops in Syria and 2,500 in Iraq as part of the international coalition that was established in 2014 to help combat the Islamic State jihadist group.

Since war broke out in the Gaza Strip after Hamas attacked Israel on October 7, 2023, pro-Iran groups have repeatedly targeted US forces in Iraq and Syria in response to Washington's support for Israel.

The United States has on multiple occasions responded to such attacks with strikes on Iran-backed groups.

https://economictimes.indiatimes.com/news/defence/us-struck-iran-aligned-groups-weapons-storage-facility-in-syria-centcom/articleshow/115713736.cms

Hindustan Times

Wed, 27 Nov 2024

Indian Army installs optical fibre at Siachen, DBO to boost connectivity

The Indian Army has installed optical fibre at two of its farthest outposts in the Ladakh sector to ensure high-speed broadband connectivity --- Siachen and Daulet Beg Oldie (DBO).

“Reaching Out To The Farthest & The Highest Battlefield: Amidst the icy heights of #Siachen and #DBO the firefurycorps #Signallers braved the toughest weather conditions to ensure optical fibre connectivity at heights above 18000 feet,” the army’s 14 Corps wrote on X on Monday.

For the very first time, optical fibre cables were laid across “the ruthless and unforgiving terrain” to connect the remote locations, it said. “Navigating treacherous crevasses to enduring bone-chilling frigid winds, they (signallers) left no stone unturned to ensure seamless connectivity in formidable conditions. Perseverance and unyielding spirit prevailed over every challenge.”

Siachen was in the spotlight in September when President Droupadi Murmu became the first Indian woman president, and the third overall, to visit the Siachen base camp, where she hailed the bravery, commitment and dedication of army’s forward deployed soldiers while serving on the world’s coldest and highest battle ground.

The base camp is the gateway to the Siachen glacier, a 76-km river of slow-moving ice. The presidential visit came in the 40th year of the Indian Army evicting Pakistani soldiers who had occupied towering heights in Siachen ; the army launched Operation Meghdoot on April 13, 1984, to clear them out and take full control of the strategic glacier.

Almost 80% of posts on the glacier are located above 16,000 feet, with Bana towering above the rest at 21,753 feet.

India is also constructing a much-needed alternative road to the strategically important DBO outpost near the contested Line of Actual Control (LAC). The new road will permit movement of soldiers, weapons and logistics to reinforce the front lines. It cannot be sighted from across the LAC, an advantage denied by the only existing road to DBO from Darbuk.

https://www.hindustantimes.com/india-news/indian-army-installs-optical-fibre-at-siachen-dbo-to-boost-connectivity-101732645900589.html

Hindustan Times

Wed, 27 Nov 2024

IIT-K develops tech making military hardware near invisible

The IIT Kanpur has unveiled a new technology called the Metamaterial Surface Cloaking System (Anālakṣhya MSCS), which is set to play a crucial role in boosting India's defence and national security.

This innovative technology is designed to make military vehicles, aircraft, and other equipment nearly invisible to radar systems, commonly used to detect objects from a distance, especially from the sky.

By absorbing radar waves, the Anālakṣhya MSCS helps hide objects from enemy eyes, making it a powerful tool in modern warfare.

The Anālakṣhya MSCS uses special materials known as "metamaterials" to absorb a broad range of radar waves, including those used by Synthetic Aperture Radar (SAR). SAR is a type of radar commonly used in military and surveillance operations for high-resolution imaging, allowing enemies to detect objects on the ground from the air.

The system significantly reduces the chances of military assets being detected by SAR, providing crucial protection from such radar-guided systems. The technology offers enhanced stealth against guided missiles that rely on radar signals to track and target their objectives.

The system was developed by a team of researchers at IIT Kanpur, led by Prof Anantha Ramakrishna, Kumar Vaibhav Srivastava, and J Ramkumar, along with their students. The research team took from 2019 to now, to perfect the technology through rigorous laboratory and field testing. Over 90% of the materials used in the project were sourced from India, marking a significant step toward self-reliance in defence technology.

IIT Kanpur's director, Prof Manindra Agrawal, congratulated the research team for their hard work and emphasised that the technology would greatly improve India's defence capabilities.

https://www.hindustantimes.com/cities/others/iitk-develops-tech-making-military-hardware-near-invisible-101732650882984.html

JANES

Tue, 26 Nov 2024

Pakistan unveils JF-17 PFX fighter

The Pakistan Air Force (PAF) has publicly revealed for the first time a model of the next generation of its Pakistan Aeronautical Complex (PAC)/Chengdu Aircraft Corporation (CAC) JF-17 ‘Thunder' fighter aircraft.

Known as the JF-17 PFX (Pakistan Fighter Experimental), the model was displayed at the International Defence Exhibition and Seminar (IDEAS) 2024 in Karachi, which concluded on 22 November.

PAF officers at IDEAS 2024 described the JF-17 PFX as a 4.5-plus generation fighter aircraft. They also said that development of the type is expected to be completed before the end of the decade.Senior Pakistani government officials told Janes that the JF-17 PFX will be equipped with air-to-air missiles (AAMs) that have a longer range than those fitted onto earlier versions of the JF-17, and that Pakistan intends to locally produce the PFX's radar system.

Long-range AAMs expected to be acquired by Pakistan for integration into the JF-17 PFX include China's PL-15.In 2022 Pakistan began receiving PL-15 AAMs for fitting onto the JF-17C Block III, the latest production model of the fighter aircraft, which was rolled out by PAC at its production facility in Kamra, north of Islamabad, in 2023.

The PAF has said the Block III aircraft provides it with several improved capabilities over the earlier Block II version. These include superior manoeuvrability, extended range, and enhanced combat capabilities, according to the PAF.

Other Block III enhancements include a reduction in the aircraft's radar cross-section, a result of greater use of composites, and improved avionics.For more information, please seePAC JF-17 Thunder .

https://www.janes.com/osint-insights/defence-news/air/pakistan-unveils-jf-17-pfx-fighter

The Tribune

Tue, 26 Nov 2024

US team visit to Kashmir base puts spotlight on cold weather operations

The visit of a US Army delegation to Indian Army’s High Altitude Warfare School (HAWS) at Sonamarg in Jammu and Kashmir, this week, has put spotlight on the growing emphasis that both

countries are laying on operations in arctic conditions amidst a changing geo-strategic environment. While high altitude operations have formed a major functional area for the Indian Army since Independence due to deployments along the Himalayan frontier against Pakistan as well as China, this domain received an impetus after the stand-off with China along the Line of Actual Control (LAC) in 2020.

Over the past few years, the Indian Military has been laying greater focus than even on prolonged deployment and sustenance of a large number of troops at 'super high altitude', as it is now permanently manning positions at heights and in areas that were generally not done before the stand-off. This includes training, studies on human physiology research and development on equipment, constructing infrastructure and establishing logistics and support echelons.

Recent western media reports have stated that in the aftermath of more than two decades of operations in the Middle East and Afghanistan, the US is now shifting its attention to fight in the Arctic. The move stems from growing concerns about efforts of Russia and China, which have strengthened bilateral ties, to increase their access to the Arctic region for trade, resources and power projection.

Earlier this year, a US Army website reported that after 50 years, the US Army has established a new strategy for cold-weather combat. "As the Arctic warms from climate change, it's going to become more and more accessible in the coming decades and take on new importance. We have to be ready to accomplish the mission in such an environment," the website stated.

India's Army Training Command headquartered at Shimla stated that nuances of training, tactical operations and future collaborations were discussed by the visiting US delegation with the Indian Army at HAWS. This included field activities. Established in December 1948, HAWS specialises in snowcraft and winter warfare. It runs two courses -- the Mountain Warfare Course and the Winter Warfare Course to train defence personnel for operations in high altitude and snow bound terrain, counter intelligence and survival skills.

Troops posted to the Siachen Glacier and to other high altitude forward posts go through the courses. Personnel from several friendly foreign countries including the US, United Kingdom and Germany also undergo specialist training at HAWS. In addition, it also conducts training for winter sports like skiing and snowboarding. Likewise, the US Army too has its Army Mountain Warfare School (AMWS) that is located at Camp Ethan Allen Training Site in the mountains of Jericho in the northeastern state of Vermont. It runs several basic and advanced courses to provide tactical and technical training for mountain warfare and cold weather operations.

The 11th Airborne Division based in the frigid domains of Alaska where the closest distance between America and Russia is just four kilometers, is among the US Army elements that specialise in Arctic operations. This division was functional in other roles from 1943 to 1958, and was reactivated in 2022 for cold weather operations.

https://www.tribuneindia.com/news/india/us-team-visit-to-kashmir-base-puts-spotlight-on-cold-weather-operations/

THE TIMES OF INDIA

Tue, 26 Nov 2024

Navy showcases INS Shardul's capabilities off Kochi coast

Armoured vehicles and tanks rolling onto the beaches of enemy territory from an amphibious warfare vessel is a sight that can instil terror in any adversary.

As part of exercises ahead of navy day Celebration, scheduled to be held on Dec 4, the Navy Day, demonstrated the capabilities of the tank landing ship INS Shardul, 25 nautical miles off the Kochi coast on Tuesday. Navy officers demonstrated the role of INS Shardul in combat as well as for training purposes during the exercise.

It can carry over 12 armoured vehicles and multiple tanks depending on their size. It can also hold fuel of around 1,100 tonnes, enough to supply even to other ships in need. Shardul hosts multiple landing craft assault (LCA) crafts, used to transport troops from ships to enemyheld shores, apart from rigid inflatable boats (RIB).

During the exercise, the boarding of a ship by a visit board search and seizure (VBSS) team was showcased by lowering a RIB from Shardul to the sea with the commandos of the VBBS team on it. The commandos then boarded the ship again and showcased how suspicious vessels are boarded for search.

The use of long-range acoustic devices (LRADs) for issuing warnings in multiple languages was also showcased during the exercise. The exercise also showed countering incidents of flooding on board are crucial.

Commander Devidas Bhandary, captain of INS Shardul, said the ship is primarily an amphibious platform which can embark army troops, tanks, and trucks to land ashore on a beach.

https://timesofindia.indiatimes.com/city/kochi/indian-navy-demonstrates-ins-shardul-amphibious-warfare-capabilities-ahead-of-navy-day/articleshow/115706473.cms

THE WEEK

Tue, 26 Nov 2024

France offers tech to make India Navy's submarines almost invisible in Indian Ocean Region

In what may come as a major enhancement to the stealth capabilities of the Indian Navy's submarine programmes, an advanced pumpjet propulsion technology has been offered by France for the planned next-generation diesel-electric attack submarines, known as Project 66, and Project 77, which is the initiative to acquire nuclear-powered attack submarines (SSNs).

The pumpset propulsion technology, a sophisticated alternative to traditional propeller systems, is already operational in the French Barracuda-class submarine. The technology significantly decreases the acoustic signature of submarines, allowing for quieter operations and improved stealth capabilities. If the deal goes through, the submarines of India may become some of the quietest in the Indian Ocean Region, offering a major advantage for the Indian Navy in underwater warfare.

Stealth is of extreme importance to submarines operating in hostile waters. Apart from helping minimize the noise produced during operation, this cutting-edge tech will also offer enhanced maneuverability to submarines, giving them an added edge while navigating complex waters.

“In a comparison between two otherwise identical submarines, the one with the pumpjet will always have a lower dived endurance, a lower dived range, a worse indiscretion ratio, a lower overall endurance, and a lower overall range, than the one with a propeller. This will confer a substantial tactical and strategic advantage on the conventionally-propelled submarine in a very broad range of operational scenarios," a report titled 'Australia’s Future Submarine: Getting this Key Capability Right' read.

The adoption of this technology will help India's operational effectiveness of its submarine fleet, making it a formidable power in the Indo-Pacific region. France's willingness to offer this advanced technology to India demonstrates the growing defence ties between the two countries, which also involves joint military exercises across air, sea, and land domains and co-design, co-development, and co-production of military hardware.

https://www.theweek.in/news/defence/2024/11/26/france-offers-tech-to-make-india-navys-submarines-almost-invisible-in-indian-ocean-region.html

The EurAsian Times

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Discussions On LCA Tejas, Akash SAMs, Embraer C-390 On Cards As Indian Delegation To Visit Brazil

An Indian defense delegation will be visiting Brazil, and discussions about purchasing transport aircraft and selling fighter jets are expected to be on the agenda.

The Brazilian aircraft maker Embraer is looking at its largest contract by selling its C-390 Millenium Medium Transport Aircraft to the Indian Air Force (IAF), and there have been reports that Brazil is considering the Indian-made Light Combat Aircraft (LCA) Tejas for its Air Force.

The two countries have been making giant leaps in the defense sector. The collaboration of the Brazilian Taurus Armas with Jindal Defence is an example of the burgeoning defense ties.

The two companies have collaborated to manufacture a diverse range of small arms with a 51:49 equity ratio. The small firearm produced at the Hisar facility in North India will bear the brand name “J D Taurus.”

The Indian defense delegation will travel to Brazil on December 8 and 9 for the Brazil-India Dialogue of the Defense Industry (DID) in Sao Jose dos Campos. Representatives of Embraer, the Brazilian Ministry of Defense, and the Brazilian government will attend the dialogue, during which agreements worth billions of dollars could be inked.

Brazilian President Luiz Inácio Lula da Silva, in his discussions with Indian Prime Minister Narendra Modi at the just concluded G20 summit in Rio, expressed Brazil’s desire to expand bilateral cooperation across several strategic sectors, including defense, space technology, and aerospace.

On their agenda will be exploring collaboration for the BrahMos supersonic cruise missile, the Akash surface-to-air missile, and the maintenance of Scorpene submarines.

Brazil has been keen on setting up joint production hubs with India to manufacture weapons systems for Latin American countries. After small arms, it has been pitching its C-390 for the IAF’s Medium Transport Aircraft (MTA) tender to replace its aging fleet of An-32s.

Other areas of collaboration identified have been aircraft manufacturing, satellite building, electronic warfare, and cyber defense. The two countries proposed to leverage each other’s strength in the defense industry while navigating trade embargoes.

Media reports indicate that a deal for India to purchase C-390 with local co-production is on the table. In return, in a government-to-government agreement, Brazil would become an export customer of the latest version of the Tejas fighter designed and manufactured in India.

The media has noted that the Tejas also has a naval variant, which could become part of the Brazilian Navy’s Aviation arm, replacing its A-4K/KU Skyhawks. The only Indian company currently present in Brazil is UP-based MKU Company. MKU has been in Brazil for some years and has executed defense contracts with the Federal Police, Military Police, and the Army.

Brazil is particularly keen on forming a Scorpene club of nations that produce and operate submarines to exchange best practices and technologies. India also operates Scorpene submarines, and a Memorandum of Understanding for Mazagon Dock Shipbuilders Limited (MDL)‘s maintenance of the submarines in Brazil could be finalized.

Brazil is developing its first nuclear-powered attack submarine, Alvaro Alberto. The submarine, created as part of a strategic partnership between Brazil and France, is expected to be launched in 2029. And it could equip the submarine with BrahMos-NG systems.

The BrahMos-NG can be a suitable choice for Brazil’s new Gripen aircraft, offering it an advanced strike capability that complements its modernizing air force.

In an interview at the beginning of 2024, Major-Brigadier Rui Chagas Mesquita, Secretary of Brazilian Defence Products, said: “When we look at India, we seek to work together so that we can also jointly develop finished products and use Brazil as a hub for selling these commonly developed products in the Latin American market.”

The Latin America Defense Market size is estimated at US$1.38 billion in 2024 and is expected to reach US$1.78 billion by 2029, growing at a CAGR of 5.30% during the forecast period (2024-2029).

Brazil's C-390 For The IAF

Brazil has been pursuing the IAF's Medium Transport Aircraft tender. Brazilian firm Embraer Defense & Security and Indian company Mahindra joined hands to manufacture the C-390 Millennium multi-mission aircraft in India. The IAF is looking to induct 40-80 aircraft under the Indian government's Make in India initiative.

The procurement will involve technology transfer and setting up a manufacturing line in the country for high-level indigenization.

The C-390 Millennium is a multi-mission, twin-engine, jet-powered, tactical transport aircraft. It entered the Brazilian Air Force in 2019.

Embraer hopes the MTA deal will pave the way for joint manufacturing of civil aircraft in India.

The C-390, said the Brazilian air chief, has been operating for five years. It has flown 15,000 hours. "Compared with the C-130 (an American plane noted for its ruggedness), the C-390 is faster and carries at least as much load. We are offering this to India and the MOUs with Mahindra are already done. So far, its serviceability level is over 97 percent," he said.

Indian 'Iron Dome' Akash SAM For Brazil

Indian "Iron-Dome" Akash Surface-to-Air Missile (SAM) is in the fray to secure an order from Brazil. Even though Chinese Sky Dragon 50 is also competing for the tender, reports indicate that the Brazilian top brass is pushing for a government-to-government deal for the Akash missiles.

Brazilian military chief General Tomas Miguel Mine Ribeiro Paiva suggested a "government-to-government" agreement with India to acquire the Akash anti-aircraft missile system.

The Akash system can effectively engage helicopters, fighter jets, and UAVs flying between the range of 4 to 25 kilometers. It is fully automatic and has a quick response time from target detection to kill. It can engage four aerial targets simultaneously at 25 kilometers of range by command guidance using a single firing unit.

It is highly immune to active and passive jamming. It can be transported swiftly via rail or road and deployed quickly. The project's overall indigenous content is 82 percent, which will increase to 93 percent by 2026-27.

https://www.eurasiantimes.com/discussions-on-embraer-c-390-lca-tejas/

Press Information Bureau
Government of India

Ministry of Science & Technology

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Dr. Jitendra Singh Announces Selection of Eight Pioneering StartUps for Support under National Quantum Mission and the National Mission on Interdisciplinary Cyber-Physical Systems

Minister Highlights Quantum Technologies' Potential to Revolutionize National Security, Healthcare, Sustainability and other walks of life

The Minister proposes that such initiatives and programs should be held beyond Delhi to ensure broader participation and engagement across the country. He emphasized that taking these events to smaller towns and other regions would provide the youth the valuable opportunity to avail of this

In a significant step towards establishing India as a global leader in quantum technology, Union Minister Dr. Jitendra Singh announced the selection of eight pioneering StartUps for support under the Department of Science and Technology's newly formulated guidelines.

These startups, chosen under the National Quantum Mission (NQM) and the National Mission on Interdisciplinary Cyber-Physical Systems (NMICPS), represent the forefront of innovation in this rapidly evolving field.

Each of the selected StartUps is set to make impactful contributions in their respective domains of quantum technology. Bengaluru-based QNu Labs is spearheading advancements in quantum communication by developing end-to-end quantum-safe heterogeneous networks. Similarly, QPiAI India Private Ltd., also from Bengaluru, is working on building a superconducting quantum computer, marking a milestone in quantum computing. Dimira Technologies Pvt. Ltd., based at IIT Mumbai, is focusing on indigenous cryogenic cables essential for quantum computing, while Prenishq Pvt. Ltd. from IIT Delhi is developing precision diode-laser systems that are vital for the sector's growth.

In quantum sensing and metrology, QuPrayog Pvt. Ltd. from Pune is innovating optical atomic clocks and related technologies, and Quanastra Pvt. Ltd. from Delhi is developing advanced cryogenics and superconducting detectors. Meanwhile, in the area of quantum materials and devices, Ahmedabad's Pristine Diamonds Pvt. Ltd. is creating diamond materials for quantum sensing, and Bengaluru's Quan2D Technologies Pvt. Ltd. is advancing superconducting Nanowire Single-photon Detectors.

These StarUps were meticulously chosen after a rigorous evaluation process, reflecting their alignment with NQM's vision of fostering cutting-edge research, innovation, and industrial applications to place India at the forefront of quantum technology on the global stage.

Addressing the scientists, youngsters, StarUp founders and venture capitalists, Dr. Jitendra Singh said that quantum technologies are poised to revolutionize multiple aspects of our lives by harnessing the unique principles of quantum science. Quantum communication, he said, offers ultra-secure methods of sharing information through quantum cryptography, making it nearly impossible for hackers to intercept or tamper with sensitive data.

This has critical implications for national security and the safety of personal and business communications, said Dr. Jitendra Singh and also emphasized the role of quantum sensing in revolutionizing healthcare, enabling highly precise medical diagnostics and imaging that could redefine how treatments are delivered.

Discussing cybersecurity, the Minister noted that quantum advancements would provide unmatched protection for financial systems, securing online transactions and safeguarding sensitive data in an era of growing cyber threats. He further highlighted how quantum simulations can optimize energy systems, making power grids more efficient, renewable energy sources more reliable, and fostering the discovery of sustainable energy materials.

The Minister underlined the far-reaching implications of quantum technology in improving satellite communication and navigation systems, which would lead to more accurate GPS services, faster satellite-based internet, and secure communications vital for disaster management and global connectivity. He added that quantum technologies could play a pivotal role in combating climate change by optimizing renewable energy systems, advancing climate modelling, and promoting sustainable agriculture. These technologies, he remarked, "are not just tools of innovation but vital instruments for securing a sustainable, climate-resilient future."

Reflecting on India's rise as a quantum powerhouse, Dr. Jitendra Singh drew attention to the visionary policies of Prime Minister Narendra Narendra Modi, which have created an enabling environment for innovation. "India is no longer waiting to catch up; we are setting the pace. Quantum technologies will shape the nation's future, and we are determined to lead this global revolution," he said.

The announcement aligns with India's broader vision for technological self-reliance and innovation by 2047. With this initiative, the Minister remarked, the selected startups are not just participants in a technological mission but torchbearers of India's ambition to emerge as a global leader in quantum science.

During the event, Union Minister Dr. Jitendra Singh proposed that such initiatives and programs should be held beyond Delhi to ensure broader participation and engagement across the country. He emphasized that taking these events to smaller towns and other regions would provide the youth with a valuable opportunity to witness the advancements in quantum technologies and related fields firsthand.

The Minister expressed confidence that exposing young minds to cutting-edge developments would inspire them to actively engage in these emerging areas. Once these youngsters begin working through startups, he noted, it would not only contribute to their livelihoods but also equip them with a forward-looking vision to drive innovation and contribute to the nation's technological future.

The event was graced by the presence of distinguished leaders in science and technology, including Dr. V.K. Saraswat, Member (S&T), NITI Aayog; Prof. Abhay Karandikar, Secretary, Department of Science & Technology; Dr. Ajai Chowdhry, Chairman, Mission Governing Board (MGB), National Quantum Mission; and Dr. Kris Gopalakrishnan, Chairman, MGB, NM-ICPS.

https://pib.gov.in/PressReleasePage.aspx?PRID=2077635

THE ECONOMIC TIMES

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ISRO's Shukrayaan takes off—on paper: Govt greenlights Venus mission to study planet's weather, atmosphere

India's journey to explore Venus officially began with government approval for the Shukrayaan mission. Scheduled for launch in 2028, Shukrayaan aims to study Venus's dense atmosphere, geological features, and weather patterns. "The Indian government has recently given a nod to our Venus Orbiting Satellite -- Shukrayaan. It will be launched in 2028," said Nilesh Desai, Director of ISRO.

The mission will deploy advanced instruments, including synthetic aperture radar and ultraviolet imaging devices, to investigate Venus's thick clouds composed of carbon dioxide and sulfuric acid. A key objective is to understand the planet's geological activity, including signs of active volcanoes. While NASA has dismissed the possibility of life on Venus's surface, scientists are keen to explore the upper atmospheric layers, where pressure levels resemble those on Earth.

ISRO had first proposed the Shukrayaan concept in 2012 by seeking payload suggestions from research institutions. With this mission, India joins global efforts to demystify Venus, often called Earth's "twin" due to its similar size and composition.

Chandrayaan 4: A Joint Lunar Mission

Building on the success of Chandrayaan 3, ISRO has proposed Chandrayaan 4, a collaborative mission with Japan targeting the Moon's south pole.

"Chandrayaan 4 will consist of two missions. India and Japan will be doing a joint mission where we will go to the tip of the Moon's south pole at 90 degrees south as compared to our last attempt of 69.3 degrees south. It will be a precise landing," Desai revealed.

The mission includes a 350-kilogram rover, 12 times heavier than Chandrayaan 3's rover, enhancing its capacity for scientific exploration. Desai added, "If we get the government's nod, we will be able to execute the mission by 2030." A key aspect of the mission involves collecting lunar soil and rock samples and returning them to Earth, a first for India.

Mars and Beyond: Expanding India's Interplanetary Reach

ISRO's Mars programme aims to extend its achievements beyond orbiting the Red Planet to landing on its surface.

Desai stated, "As a part of the Mars mission, we will not only put a satellite on the Mars orbit but we will also attempt to land on its surface." The Mars mission reflects India's commitment to interplanetary exploration, building on the success of the Mars Orbiter Mission (Mangalyaan).

Gaganyaan and India's Space Station

In the field of human spaceflight, ISRO's Gaganyaan programme is set to achieve critical milestones. "Gaganyaan will be launched in the next two years. It will be an unmanned flight after which we will launch a manned flight," Desai confirmed.

Additionally, the Indian government has approved the construction of the country's first space station. "It will not be as big as the ISS but will have five modules. We will launch the first module in 2028, and India's space station will be ready by 2035," Desai stated. The space station is expected to serve as a transit hub for lunar missions, aligning with Prime Minister Narendra Modi's vision to land Indian astronauts on the Moon by 2040.

INSAT 4 Series: Advancing Meteorological Capabilities

ISRO is also focusing on upgrading its meteorological and oceanographic capabilities through the INSAT 4 series. "We are having discussions on the new sensors and satellites which will be launched as a part of the INSAT 4 series," said Desai.

These advanced satellites aim to close the technological gap in weather forecasting. "The world is one generation ahead of us, and we will be able to catch up with these new sensors. We will be able to provide even better forecasts," he added.

ISRO's ambitions stem from decades of incremental progress in space exploration. From launching Aryabhata, India's first satellite in 1975, to achieving a low-cost Mars orbit with Mangalyaan in 2014, the agency has continually set benchmarks. The Chandrayaan missions have brought India global recognition in lunar exploration, and Gaganyaan represents the next step in human spaceflight. These new initiatives showcase India's commitment to harnessing space technology for scientific advancement, economic growth, and international collaboration.

https://economictimes.indiatimes.com/news/science/isros-shukrayaan-takes-offon-paper-govt-greenlights-venus-mission-to-study-planets-weather-atmosphere/articleshow/115684492.cms