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The EurAsian Times

Mon, 20 Jun 2022

India's 1st 'Indigenous Missile' Hits Target; Experts Decode How Prithvi & Agni Missiles Boost Indian Rocket Force

The Defence Ministry stated that the missile met all operational and technical parameters. The Ministry, in a statement, said, "the short-range ballistic missile Prithvi-2 was tested-fired on June 15 at around 7.30 pm from an Integrated Test Centre at Chandipur, Odisha." Previously, Prithvi-II was successfully launched from the ITR in Chandipur on February 21, 2018. Later, on November 20, 2019, two successive Prithvi-II trials were accomplished from the same base. The Prithvi missile is a proven system that can hit targets with pinpoint accuracy. Even in the latest test, the launch successfully validated the missile's operational and technical characteristics. In 2003, this missile was inducted by the Strategic Forces Command (SFC) to boost the country's nuclear arsenal. Notably, it is India's first missile produced under the Integrated Guided Missile Development Program.

The Ministry of Defence started the program to carry out extensive research and develop nuclear-capable missiles. These types of tests are conducted by choosing missiles at random from India's overall military arsenal and production stock. This is done to assess India's progress and emergency preparedness in the event of a warlike situation. In a similar line, Lt Col JS Sodhi (Retd), Defence & Strategic Affairs Analyst told the EurAsian Times "Routine missile tests are required to check the efficacy and effectiveness of the weapon systems being developed so that in case of any mid-course corrections, the same can be carried out as developing a missile is time and cost heavy and neither wastage of time or money is desirable in regards to the security of the nation."

The test comes nearly ten days after India conducted a routine test of its nuclear-capable Agni missile. After the "routine user training" launch test of Agni-IV, the government had said that the successful test "reaffirms India's policy of having a Credible Minimum Deterrence Capability." Don McLain Gill, a Philippines-based geopolitical analyst and author, outlined the three key reasons for the recent back-to-back missile launches and their significance for India. First, he emphasized India's desire to improve and develop its current and future missile capabilities, saying, "The late Chief of Defense Staff, General Bipin Rawat emphasized the need for India to develop a credible rocket force to not only balance or offset China's capabilities in the same field but also to maintain the South Asian state's leverage vis-à-vis the shifts taking place in the global security architecture."

"Moreover, given the intricacy of missile development, routine tests are necessary to ensure that all potential snags are ironed out," he added. Second, these tests come at a time when China and Pakistan are bolstering their cooperation while also attempting to counterbalance and check India's influence, territorial integrity, and leadership role in the Indo-Pacific. McLain Gill told the EurAsian Times – "India is situated in perhaps the most complicated geographical neighborhood, sandwiched between two assertive nuclear powers that seek to nibble on its territory on multiple fronts."

"Given the complications of this security environment, as China's military capabilities continue to grow at an exponential rate, India must continue to improve its deterrence capabilities to illustrate that at a time of conflict, it can also inflict damage that will be costly for the other state. Thus, routine tests and the constant efforts to modernize are very important for India given the current geopolitical conditions," he noted. The third aspect addresses India's growing importance as a security provider. The Prithvi and the Agni are two of India's indigenously developed missiles.

Taking this into consideration, McLain Gill stated that the successful tests not only demonstrate India's national security achievements but also serve as a significant development for other Indo-Pacific countries that are continuously trying to improve and expand their military capabilities given the unfolding geopolitical dynamics. "The recent BrahMos sale to the Philippines and similar deals that are expected to materialize with Indonesia and Vietnam add to this very momentum. The need for India to improve its technological capacity and solidify its indigenization process will be crucial in the years to come in order to emphasize its role as a reliable and effective security provider throughout the Indo-Pacific and beyond," he added.

Prithvi Vs. Agni Missile

As previously mentioned, the Prithvi ballistic missile is the first indigenously-built ballistic missile developed by the Defence Research and Development Organisation (DRDO) under the Integrated Guided Missile Development Program. It's a road-mobile short-range ballistic missile (SRBM), with the first two variants being single-stage, two engines, and liquid fuel. The development of this missile began in 1983 and was first fired on February 25, 1988. There are three versions of the Prithvi missile. "Prithvi being a nuclear-capable missile will have enough deterrence value for both Pakistan and China as the targets located in these two countries within the range of Prithvi can be easily targeted," Lt Col JS Sodhi (Retd) added.

Similarly, the DRDO also developed the Agni series of ballistic missiles under the Integrated Guided Missile Development Program. This series includes missiles capable of hitting targets varying from Short/Intermediate to long-range. The Agni missile was first launched in May 1989, a year after the Prithvi missile. It is a two-stage missile, with the first stage utilizing the first-stage solid-fuel booster motor of the SLV-3 satellite launch vehicle. According to Lt Col JS Sodhi (Retd), "The biggest difference between Prithvi & Agni missiles is the distance and the payload capacity. While Prithvi has a range of 150-500 km, Agni-V has a range of 5500-8000 km. Prithvi carries a warhead of 500-1000 kg while Agni carries a warhead of 1500 kg."

Prithvi Missile Series

India possesses three variants of Prithvi missiles: Prithvi-I with a range of 150 kilometers, Prithvi-II with a range of 250 kilometers, and Prithvi-III with a range of 350 kilometers. The Prithvi I class is a surface-to-surface missile with a range of 150 kilometers and a maximum warhead mounting capability of 1,000 kilograms. It can be launched using transporter erector launchers and has a 10–50 m accuracy. The Indian Army fielded this class of Prithvi missile in 1994. Apparently, the engine for the missile was derived from the Soviet S-75 surface-to-air missile. The Army began user testing of the Prithvi I in June 1994, following a successful flight test in 1993. The missile was formally brought into service by India in 1996. Between 1988 and 1999, India is said to have conducted at least 16 flight tests on the Prithvi. It can strike a quarter of Pakistan's territory, including Islamabad and most other important cities.

Prithvi-2 is a liquid-fueled single-stage missile with a maximum warhead mounting capability of 500 kilograms and a 250 kilometers (160 mi) range. However, according to reports, the range has been increased to 350 kilometers, and the payload capacity has also been increased to 500 to 1000 kilograms. The Indian Air Force is the primary user of this missile. The missile was first launched on January 27, 1996, and the last stages of development were completed in 2004. The missile has anti-ballistic missile deception characteristics. The Prithvi-2 missile is also capable of carrying nuclear weapons and offers the capability to strike the enemy at any time of day or night. This missile has undergone surface-to-surface testing. This variant has the capability to strike at least half of Pakistan, including practically all key military targets and cities.

The Prithvi III class (codenamed Dhanush, which means "bow") is a ship-to-surface missile with two stages. The first stage is solid-fueled and has a thrust motor with a force of 16 metric tonnes (157 kN). Liquid fuel is used in the second step. This variant has a 350 km range and a 1,000 kg payload capability. Dhanush is a system that consists of a missile and a stabilizing platform. It is a modified Prithvi that has been certified for seaworthiness. The missile should be launched from a launch pad that is hydraulically stabilized. The missile has been tested several times by naval surface ships. The Sukanya class patrol vessel INS Subhadra was used to test Prithvi III for the first time in 2000. The 250 km variant's first flight test was only partially successful. In 2004, the full operational testing was completed. In December of the following year, an improved 350 km version of the missile was successfully launched from the INS Rajput and targeted a land-based target.

Agni Missile Series

Meanwhile, the Agni series comprises five missile versions, with a sixth in the pipeline. Agni-P, an advanced variant of the Agni Missile Class, is also in its developmental phase. The Agni-I is a ballistic missile with a short to intermediate range. The missile ranges from 700km to 800km and can deliver a conventional payload of 1,000 kilograms or a nuclear warhead. These are fueled by solid propellants and transported by rail and road. A nuclear-capable Agni-I was fired from Wheeler Island in March 2010. The Agni-II is a medium-range ballistic missile with two solid-fuel stages. The missile can strike most of China's western, central, and southern regions.

It is a road/rail-mobile launch missile with a 1,000-kilogram payload, often a 150 kT or 200 kT nuclear bomb, and an accuracy of 40m CEP. It can also be outfitted with standard high-

explosive bombs. The Agni-III was launched from Wheeler Island in July 2006 but failed to reach its target. In April 2007, it was successfully tested. This test, according to New Delhi, confirmed India's nuclear reach & deterrence as the missile can accurately hit targets at distances more than 3000 km away. Agni-IV is a nuclear-capable intermediate-range ballistic missile with two stages. The missile was initially tested from Wheeler Island in November 2011. During the test, it reached an altitude of 900 kilometers. In September 2012, it was successfully tested again.

During its third test in January 2014, it achieved a height of 850 kilometers. The Agni-IV is 20 meters long and weighs 17 tons. It has a payload capacity of 800kg. The missile's maximum range is 4,000 kilometers. Agni-V, India's only Intercontinental Ballistic Missile (ICBM), is still developing. Although the declared range of Agni-V is 5,500-5,800 kilometers, defense analysts believe it may easily be increased to at least 8,000 kilometers. The missile is a three-stage solid-fueled missile that can carry up to 10 MIRVs. The missile is 17.5-20 meters long, 2-2.2 meters broad, and weighs 49,000-55,000 kilograms at launch. While no official information on the type of payload Agni-V would carry has been released, all such weapons with other countries are nuclear-tipped.

https://eurasiantimes.com/indias-1st-indigenous-missile-hits-target-experts-decode-how-prithvi-agni/

FINANCIAL EXPRESS
Read to Lead

Sun, 19 Jun 2022

Astra Missile Contract with BDL: Is it Another Step in Opening an Export Pathway?

The Ministry of Defence signed a Rs 2,971 crore deal with Bharat Dynamics Limited (BDL) to secure the supply of the first air-to-air missile (AAM) developed by India and the equipment associated with it. The missile is the Astra Mark-1 Beyond Visual Range (BVR) AAM. A missile with these features, i.e., AAM with BVR capability, provides an aircraft with large stand-off ranges. With this, an aircraft can neutralise the adversary's fighter jet without having to expose itself to enemy air defence measures. Such a setup is essential in ensuring that we gain and sustain air space superiority. With a range of around 110 kilometres, a top speed of Mach 4.5, and a price tag of Rs 7-8 crores apiece, the Astra Mk-I is boasted to be technologically and economically superior to many such similar missile systems developed elsewhere. While plans are to reduce India's dependence on French and Russian missiles and integrate the missile onboard the Indian Air Force's (IAF) Tejas and MiG-29 platforms, export may not be too far-fetched a possibility either. The Astra Mk-I BVRAAM was designed on the basis of the staff requirements presented by the Indian Air Force (IAF). Designed by the Defence Research and Development Organisation (DRDO), the missile will focus not only on BVR attacking capabilities but also on close combat engagement.

DRDO developed the missile and associated systems required for its launch, ground handling and testing in coordination with the IAF. The latter has already undertaken successful trials of the missile, which is fully integrated on the Su 30 MK-I fighter aircraft. Astra will be integrated with other fighter jets, including the Light Combat Aircraft (LCA) Tejas and the Indian Navy's MiG 29K. Noted military hardware analyst Joseph Chacko noted that the Astra Mk-1 allows the IAF to have a cheaper domestic option to the Russian and French missiles. However, he also pointed out that the missile's range is not radically different from the alternatives. "The technical description of the missile indicates that it is capable of hitting targets flying at speeds up to Mach 1.4 at a distance of 110 km with a 15 kg warhead. As for range, it does not fundamentally change the war fighting capability as the IAF has similar distance missiles," he said.

According to Chacko, the real strength of the missile lies in its technical specifications and the fact that it is indigenous. He said that "the missile's technical description shows that it is technologically superior, and in case it develops operational problems, it can be rectified within India. Another important feature is that it can be integrated into any platform the IAF requires. For example, France may have objections to integrating its missiles on the platforms or radars of non-French or Indian origin." Former DRDO Director General (Production, Coordination, and Interaction) Dr S. Guruprasad also praised the indigenously developed technologies of the missile. He called these technologies "state of the art." "The quality assurance systems are very stringent, and the result is a highly reliable system. Astra has a control guidance system that has been mastered by the Missile Cluster of DRDO. The system has been thoroughly flight-tested a number of times for different aspects of target engagement."

Apart from the technological developments, the contract signed by the MoD with BDL has boosted self-reliance in the defence sector, too. The Transfer of Technology (ToT) from DRDO to BDL for missile production is already completed. This project will serve as a catalyst in developing infrastructure and testing facilities at BDL, where production of the munition is currently in progress. The indigenous production of the Astra missile is also likely to create opportunities for several micro, small, and medium enterprises (MSMEs) in aerospace technology.

Export Potential

Dr Guruprasad believes this missile is "one of the top-class Missiles in the world today." Even in the past, sources have discussed the Astra missile's export potential. They had also said that the weapon would be considered for sale to friendly countries. Chacko is sceptical about this, though. He believes that with BDL having received the first order, the production missiles will have to go through some hiccups before settling down as a matured product. The missile also has to see combat before it can be called combat worthy. He said, "it is too early to talk about Astra Mk-1's exports, and India itself will require it in substantial quantities." Miguel Miranda, a Philippines-based South Asian defence industry analyst, emphasised that "instead of sizing up India's "defence products" in the global market, what needs to be accomplished are internal dialogues between the DRDO and the defence ministry on what, how, and where to export." He went on to say that there is a real push to sell Indian military technology abroad and some minor successes in that regard are very encouraging. "However, keep in mind that China, France, and Israel have free-wheeling and unregulated arms exports policies that are only sometimes reined in by their governments since these same governments want to boost high-quality exports and sustain their national champions. I think India is doing the same but is still in the early stages."

Miranda believes that when it comes to the Astra Mk-I in particular, it will help if the Indian government had a list of all-weather friends who have unlimited access to the best Indian military technology. He highlighted that "this is how the USA does it. The Russians have done the same to India for decades…and it has been very profitable!" In Miranda's view, the questions that need attention at this point relate to who India's long-term friends are and whether they need premium AAMs. While there is consensus amongst most experts about the missile's export potential, the current timeline for domestic procurements means that the materialisation of this potential is a little farther away in the future.

https://www.financialexpress.com/defence/astra-missile-contract-with-bdl-is-it-another-step-in-opening-an-export-pathway/2565817/

DRDO On Twitter

Fri, 17 Jun 2022

Defence News

Defence Strategic: National/International

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Sat, 18 Jun 2022 3:34 PM

अग्निपथ- रक्षा मंत्री श्री राजनाथ सिंह ने अग्निवीरों के लिए भारतीय तटरक्षक, रक्षा असैन्य पदों और 16 डीपीएसयू की नौकरियों में 10% आरक्षण को स्वीकृति दी

रक्षा मंत्री श्री राजनाथ सिंह ने आवश्यक पात्रता मानदंडों को पूरा करने वाले अग्निवीरों के लिए रक्षा मंत्रालय में नौकरी की रिक्तियों के 10% को आरक्षित करने के प्रस्ताव को स्वीकृति प्रदान कर दी है। यह 10% आरक्षण भारतीय तटरक्षक बल, रक्षा असैन्य पदों और सभी 16 रक्षा सार्वजनिक क्षेत्र के उपक्रमों में लागू किया जाएगा। इनमें शामिल हैं-

हिंदुस्तान एयरोनॉटिक्स लिमिटेड (एचएएल), भारत इलेक्ट्रॉनिक्स लिमिटेड (बीईएल), भारत अर्थ मूवर्स लिमिटेड (बीईएमएल), भारत डायनेमिक्स लिमिटेड (बीडीएल), गार्डन रीच शिपबिल्डर्स एंड इंजीनियर्स (जीआरएसई) लिमिटेड, गोवा शिपयार्ड लिमिटेड (जीएसएल), हिंदुस्तान शिपयार्ड लिमिटेड (एचएसएल), मझगांव डॉक शिपबिल्डर्स (एमडीएल), मिश्रा धातु निगम (मिधानी) लिमिटेड, बख्तरबंद वाहन निगम लिमिटेड (एवीएनएल), एडवांस्ड वेपन्स एंड इक्विपमेंट इंडिया लिमिटेड (एडब्ल्यू एंड ईआईएल), मुनिशन्स इंडिया लिमिटेड (एमआईएल), यंत्र इंडिया लिमिटेड (वाईआईएल), ग्लाइडर्स इंडिया लिमिटेड (जीआईएल), इंडिया ऑप्टेल लिमिटेड (आईओएल) और ट्रूप कम्फर्ट्स लिमिटेड (टीसीएल)। यह आरक्षण भूतपूर्व सैनिकों के लिए वर्तमान आरक्षण के अतिरिक्त उपलब्ध कराया जायेगा।

इन प्रावधानों को लागू करने के लिए प्रासंगिक भर्ती नियमों में आवश्यक संशोधन लागू किए जाएंगे। डीपीएसयू को सलाह दी जाएगी कि वे अपने संबंधित भर्ती नियमों में समान संशोधन करें। उपरोक्त नौकरियों में अग्निवीरों की भर्ती के लिए आवश्यक आयु सीमा में छूट का प्रावधान भी किया जाएगा।

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1835076

thesquadron.in

Fri, 17 Jun 2022

Agnipath is a Win-Win Plan for All Stakeholders

By RKS Bhaduria

The Agnipath scheme heralds a new era in the journey of India's national defence with a direct bearing on the defence forces as well as the youth of the nation — which are two integral pillars of a nation-State. The scheme, announced by Union defence minister Rajnath Singh with the three service chiefs, has sparked a variety of commentary, narratives and apprehensions, highlighting a raft of pros and cons regarding the scheme. In an ever-evolving world, change is the only constant. At the same time, resistance to change is an integral aspect of human nature, which needs to be kept in mind. Before proceeding, let's take a look at the broad outline of the scheme.

Agnipath, as per government announcements, is the new recruitment route for all hires in personnel below the officer rank (PBOR) category, commonly called PBOR, in all three services. Eligible candidates between 17.5 and 21 — this upper-age ceiling has been extended by two years in a one-time moratorium for 2022 — will be recruited for a fixed period of four years. After four years, all Agniveers — the recruits under this scheme – will be given a choice to apply for regular engagement in their respective forces. However, only 25% Agniveers will be absorbed on regular engagement. Questions have been raised about the utilisation of Agniveers and its impact on the operational capacity and war-waging potential of the services. Let us consider these concerns. The Indian Air Force (IAF) is a technology-centric modern air force with all combat platforms, equipment as well as weapon systems, functioning in a networked environment. IAF requires young and adaptable minds with contemporary technology knowhow so that they can be trained in emerging technologies in the least possible time.

Moreover, as the life cycles of emerging technologies are getting compressed and reduced each day, frequent inductions for a short duration are more logical vis-à-vis inductions with longer commitments. A shorter induction period gives a decision-making option to both the aspirants as well as the services after four years. No such option was available in the erstwhile system. As a result, on the one hand, a section of the youth was apprehensive about exercising the option of joining the services owing to a minimum commitment of 15-20 years, and on the other, the services were also facing certain challenges in re-skilling senior or older people in emerging technologies. Frequent induction of young people and a reduction in the average age of combatants augurs well for the services. A reduction in average age of the combatants, commonly called air warriors in IAF, will be a major advantage. Indeed, there will be a requirement to tweak the training durations, patterns as well as posting profiles of Agniveers vis-à-vis existing systems.

The defence services are the last bastions of national defence and no one should have any doubts about the vision and planning of the service chiefs. The services, by now, must have deliberated upon all the dimensions of the new scheme, including training patterns and operational utilisation. There would be no dilution, whatsoever, at any level. All citizens of India must be

rest assured that the defence forces will prove themselves every time and in every aspect, whenever they are called upon to do so. The other primary stakeholder is the country's youth. The financial package announced by the government is much higher than what the best corporate firms offer to a 10th or 12th graduate. A fresh recruit will get ₹30,000 per month and in addition, ₹9,000 per month will be contributed by the government towards his Seva Nidhi, or corpus.

Additionally, every year, there will be a rise of about 10% in the salary. It is pertinent to highlight that most of the routine day-to-day requirements including board, lodging and medical facilities are looked after by the services; hence an Agniveer will not be required to spend any money on these. Since a minuscule portion of the income will be spent on cost of living, a large chunk of the salary can be saved. In addition, after completion of the four years, every Agniveer will get more than ₹11 lakh, as his Seva Nidhi account matures. Moreover, this scheme will also meet other aspirations of the youth, which includes pride, self-respect, upgrading of skills as well as educational qualifications in line with the New Education Policy (NEP), 2020. As already announced by the ministry of education, the University Grants Commission and Indira Gandhi National Open University will be maximising the provisions of NEP 2020 to create mechanisms and options for Agniveers to upgrade their educational qualifications. This, in turn, will facilitate the second innings of those who are not absorbed by the services. The ministry of home affairs is already in the process of rolling out a scheme to absorb these young and skilled citizens in the Central Armed Police Forces. They will also have the option of looking for a decent job in the government sector, industry, IT sector as well as the corporate world, or to start ventures of their own by utilising their Seva Nidhi.

Lastly, the Agnipath scheme will have a phenomenal intangible contribution to nation building. The inculcation of the qualities of discipline, honesty, josh (passion), esprit de-corps, service before self, nation first attitude in young and impressionable minds will be a significant gamechanger in nation-building. In my opinion, this scheme is a win-win situation for the services as well as the youth of the nation and its contribution to nation building will be phenomenal.

https://thesquadron.in/agnipath-is-a-win-win-plan-for-all-stakeholders/

Hindustan Times

Mon, 20 Jun 2022

Why a Young, Fitter and Tech-Savvy Agniveer is the Only Answer to China?

Although it is the job of opposition to criticise every step that the ruling party takes, the instigated arson and furore over the Narendra Modi government's novel "Agnipath" military scheme is playing politics with national security. Already the nation has suffered enough when politicians chose to play politics with terror in the past decades with an eye towards the vote-bank. The "Agniveer" recruitment scheme is all about making the Indian military younger and more fitter as future deployments will be on the 3,488 km-long Line of Actual Control (LAC)

with China as India expects Beijing to mount more military pressure over disputed border. By recruiting Agniveers between 17 ½ -21 (extended to 23 for next two years) years of age, the government wants to lower the age profile of its troops and give preference to merit by only allowing the fittest to stay in the army with the rest absorbed in police or para-military forces etc. For reason why the Agnipath was chosen, consider the following:

1. The current composition of Indian Army in the personnel below officer's rank (PBOR) category is that only 19 per cent are below 25 years of age; 27 per cent are in the 26 years-30 years bracket; 20 per cent are in 31-35 years category; whopping 19 per cent are in 36-40 years; 10.2 per cent are in 41-45 years bracket and 4.4 per cent are in 46-50 years category. This clearly shows that the median age profile of PBOR of Indian Army is higher as compared to other countries particularly China. 2. Despite the age-profile rising in median age, the Indian Army since May 2020 Chinese transgressions is deployed at rarefied heights to tackle Beijing's belligerence on the LAC. Under Operation Snow Leopard, the Indian troops are deployed at heights varying from 15,000 feet to 18,500 feet (more than the height of the highest peak in Alps) in Eastern Ladakh.

The troops are deployed between 12,000 feet to 16,500 feet in the crucial middle sector of the LAC and from 11,000 feet to 18,500 feet in the sensitive Sikkim sector. The troops are deployed at heights 10,000 feet to 16,000 feet in the Kameng and Rest of Arunachal Pradesh region. Deployment at these heights take a huge toll on older soldiers as it is accompanied by sub-zero arctic temperatures and frequent snowstorms round the year. The only two season at this height are cold and freeze.

3. Since the PLA transgressions in East Ladakh, the total number of admissions in Leh base hospital was 5,349 in 2021 out of which as many as 560 were admitted with deadly high altitude pulmonary edema. The total number of admissions till May 31 are 1947 out of which as many as 113-115 are down with edema. Frost bites and chill-blains account for over 200 admissions and some 250 personnel were medically evacuated from the battle zone along the LAC. Fact is that only a fit soldier and a fitter officer can survive in this environment where lack of oxygen can cloud the decision making and cause delusions.

Rather than make recruitment a free for all based only on fitness and medical, the time has come to have troopers who understand technology, can fly surveillance and armed drones, and use loitering ammunition to target the enemy positions. The days of marching infantry ahead or with the tanks is over long time ago as is evident in Russia's Ukraine war with the future belonging to stand-off radar-based weapons like anti-tank guided missiles, AI intelligence and information warfare. The future war will as much as fought on ground as in mind as perception is the key to information warfare. The future trooper will have to handle latest cyber-secure communication devices not phones of World War II era. The future soldier of India will not be a legatee of the British Empire harping on regimental honour but a confident combatant Agniveer of independent India. By placing hurdles in implementation of Agnipath project, the Opposition is only making India more vulnerable to China.

https://www.hindustantimes.com/india-news/why-a-young-fitter-and-tech-savvy-agniveer-is-the-only-answer-to-china-101655701801040-amp.html

Press Information Bureau
Government of India

Ministry of Defence

Sun, 19 Jun 2022 10:10 PM

Op SANKALP: 3rd Year of Indian Navy's Maritime Security Operations

Indian Navy's stealth Frigate, INS Talwar is presently deployed for Op Sankalp commemorating the 3rd continuous year of Indian Navy's presence in the Gulf for protection of India's Maritime Interests. In the milieu of the deteriorating security situation in the Gulf region, post attacks on merchant ships in the Gulf of Oman in June 2019, Indian Navy had commenced Maritime Security Operations, code named 'Op SANKALP', in the Gulf Region on 19 June 2019 to ensure safe passage of Indian Flag Vessels transiting through the Strait of Hormuz.

This operation is being progressed in close coordination with all stakeholders including Ministry of Defence, Ministry of External Affairs, Ministry of Shipping, Ministry of Petroleum and Natural Gas and DG, Shipping. Indian Navy continues to monitor the situation in the Gulf region and is maintaining presence in the region to ensure security of our sea borne trade and the safety of Indian Flag Merchant Vessels transiting through the region. The Indian Navy stands committed to protection of the nation's Maritime Interests.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1835382

Business Standard

Mon, 20 Jun 2022

Australian Defence Minister to Visit India Today to Boost Security Ties

Australian Defence Minister Richard Marles will be on a visit to India from Monday to hold a bilateral meeting with Defence Minister Rajnath Singh to strengthen defence and security cooperation Australian Defence Minister Richard Marles will be on a visit to India from Monday to hold a bilateral meeting with Defence Minister Rajnath Singh to strengthen defence and security cooperation between both the countries. His visit marks the first high-level visit from Australia after newly-elected prime minister Anthony Albanese took office on May 23.

During his visit from June 20-23, Defence Minister Marles will hold his first bilateral Defence Ministers' meeting with Union Minister Rajnath Singh. "Australia and India are Comprehensive Strategic Partners. I am committed to strengthening Australia's defence and security cooperation with India," said Australia's Deputy Prime Minister and Defence Minister Richard Marles. "I am looking forward to meeting with my counterpart, Defence Minister Rajnath Singh, and holding our first bilateral Defence Ministers' Meeting," he added. "Minister Singh has been instrumental

in advancing India-Australia defence ties and I look forward to working with him to enhance the defence pillar of our Comprehensive Strategic Partnership," Deputy Prime Minister Marles said.

The Minister also noted that India is one of Australia's closest security partners and the Government is focused on revitalising Australia's historically deep engagement with our partners across the Indo-Pacific. "The rules-based international order that has brought peace and prosperity to the Indo-Pacific for decades is experiencing pressure, as we face shifts in the geostrategic order," Deputy Prime Minister Marles said. "Australia stands ready to work closely with India in support of an open, inclusive and resilient Indo-Pacific". During the visit, Deputy Prime Minister Marles will also meet External Affairs Minister Dr S Jaishankar and engage national security and defence policymakers and personnel. Indo-Pacific Endeavour 2022, Defence's flagship engagement activity, returns to India this year. This year also marks the 75th anniversary of India's independence.

Earlier, the Australian PM Albanese said that the relationship with India is very important and ties between the two countries have never been closer. Speaking to ANI, the Australian PM said, "Our relationship with India is a very important one and it was a great honour to meet with Prime Minister Narendra Modi." PM Modi congratulated Prime Minister Albanese on his election victory. Both leaders reviewed the multi-faceted cooperation under the Comprehensive Strategic Partnership, including trade and investment, defense manufacturing, renewable energy, green hydrogen, education, science and technology, agricultural research, sports, and people-to-people ties. Both Prime Ministers affirmed their desire to continue the positive momentum in the bilateral relationship. Bilateral discussions with PM Narendra Modi focused on Australia and India's full strategic and economic agenda, including clean energy technology.

The momentum of the bilateral relationship intensified with regular high-level exchanges, despite the pandemic-induced disruption. Prime Minister Modi held the first in-person bilateral meeting in the post-pandemic period with former Australian Prime Minister Scott Morrison on September 23, 2021. Prime Minister also met Morrison in Glasgow on the sidelines of CoP26 Climate Summit on November 1, 2021. Together with other leaders, they jointly launched the 'Infrastructure for the Resilient Island States (IRIS)' at the World Leaders Summit at COP26, Glasgow on November 2, 2021. Former Prime Minister Morrison and Minister for Foreign Affairs Marise Payne participated (virtually) in the Raisina Dialogue in April 2021. Prime Minister delivered the keynote address at the Sydney Dialogue, on India's technology evolution and revolution on 18 November 2021.

EAM participated in the Sydney Dialogue session on "Democracies and Global Technology Governance" with Minister for Foreign Affairs Marise Payne and Nick Clegg, VP, Facebook on November 19, 2021. EAM virtually delivered the prestigious annual JG Crawford Oration at the Australian National University. Minister for Foreign Affairs Marise Payne visited Delhi and co-chaired the First India-Australia 2+2 Ministerial Dialogue with EAM and Raksha Mantri Rajnath Singh on September 11, 2021. The Dialogue reflected the growing convergence between India and Australia on security issues and a shared commitment for a free, open, prosperous and rules-based Indo-Pacific region.

https://www.business-standard.com/article/current-affairs/australian-defence-minister-to-visit-india-today-to-boost-security-ties-122062000292_1.html

NewsOnAIR

Mon, 20 Jun 2022

Military Modernization Set to Augment Defence Capabilities Besides Ensuring Self-Reliance

Based on threat perception, entire spectrum of security and operational challenges and fast technological changes taking place across the globe, India is rapidly modernising its defence capabilities to keep the Armed Forces in a state of readiness. It means preparing for the future, increasing self reliance and optimizing resources for the maximum efficiency. In recent years, India has taken several ground breaking steps like creating defence planning committee, appointment of CDS to bring in greater synergy with Ministry of Defence, long term modernization plan by factoring the emerging or futuristic security situations, army design bureau, reorganization of Army headquarters among others.

Under 'Make in India' program indigenous design, development and manufacture of defence equipments are being vigorously encouraged in the country, thereby reducing import of defence equipment. The defence budget for the financial year 2022-23 is Rs 5,25,166 crore, an increase of Rs 46,970 crores or 9% over last year's Rs 4,78,196 crore. As per the budget, Rs 1.52 lakh crore is being spent in capital expenditure. In plain words, the allocation under capital expenditure relates to modernisation and infrastructure development of the Armed Forces only. Out of this 1.52 lakh crore, 68% of the amount is being spent on indigenous manufacturing to encourage investments and attract fresh capacity creation. An increase of more than 10% in back-to-back capital budgets expresses the continued push towards the modernisation of the armed forces. 25% of defence R&D budget is earmarked for private industries, startups and academia. Private industry is being encouraged to take up design and development of military platforms and equipment in collaboration with DRDO and other organizations through special purpose vehicle model.

Ease of doing business is helping indigenous defence production too. An independent nodal umbrella body created for meeting wide ranging testing and certification requirements of defence systems and platforms, is helping domestic industry through faster processes and cost-efficiency. Two positive indigenisation lists comprising 101 and 108 items were promulgated by Department of Military Affairs (DMA) under Ministry of Defence in recent months. Of these, 153 items are planned to be indigenized upto December, 2022. In addition, to minimize import by DPSUs, Department of Defence Production has also notified a positive indigenisation list of things. The list contains 2500 items, which are already indigenized and 351 items which are planned to be indigenized in coming three years till December, 2024, of which 172 items are expected to be indigenized upto December, 2022.

Moreover, positive indigenisation list comprises defence equipments which are being designed, developed and manufactured over a period from 2020 to 2025. It is estimated that over approximately Rs. five lakh crore worth of equipment included in both the positive indigenisation lists, will be procured from domestic industry over the next five to seven years. Government is also considering adding more items for indigenous production. Time line to add more items is reviewed continuously based on the requirements of Armed Forces as well as

capability of domestic industry. Despite all these revolutionary efforts, we still need to make a lot of reforms or changes to rise to the fast changing security situations and the 'Agnipath Scheme' is in line with that only.

https://newsonair.com/2022/06/18/military-modernization-set-to-augment-defence-capabilities-besides-ensuring-self-reliance/

THE NEW INDIAN EXPRESS

Mon, 20 Jun 2022

Power Games: Israel Seeks Closer G2G and Private Partnerships

Israel has offered niche technologies of its prime armaments to Indian companies to support the Make In India scheme. Sources said a formal offer was made during the recent visit of Israeli defence minister Benny Gantz to New Delhi. Gantz reportedly sought an umbrella pact between the two governments under which Israel would offer full technology transfer of its Spike anti-tank guided missiles, Spice-250 precision-guided munitions and software-defined radio sets, besides providing technical assistance in the development of futuristic military technologies in partnership with DRDO. Israel also wants private Indian enterprises to forge new partnerships with Israeli defence companies to undertake various military upgrade programmes under Make In India. India has been working hard to reduce dependence on foreign-made systems and has asked for transfer of technology of composite materials, nanotechnologies and artificial intelligence-enabled sub-systems for defence projects under Make In India. The Indian government has also asked for progressive increase in the indigenous components in Israeli-supplied Barak-8 missiles or MRSAM (medium-range surface to air missiles), long-range tracking radars, and unmanned aerial vehicles. Ties between the two countries are strengthening even after the change of government in Israel.

The Congress party has launched a spirited defence of its leadership both on the street and in the media on the National Herald case. Party leaders, including chief ministers of Congress-ruled states, are marching in solidarity with their former president Rahul Gandhi, who has been summoned and grilled by the Enforcement Directorate for long hours in Delhi. In the press conferences, press notes, media bytes as well as in articles in the National Herald, the party newspaper that is in eye of the storm, Congress leaders wax eloquent about the history of the newspaper: How it was started by freedom fighters in British-ruled India to propagate the idea of independence, etc. They also emphasise the fact that the new company, Young Indian, that took over the Rs 90-crore loan of National Herald's owner Associated Journals Ltd, is a not-for-profit company and therefore no director or shareholder is allowed to monetarily benefit from it, except for availing professional expenses.

In private, however, Congress leaders rue the decision of creating Young Indian. They wonder what was the objective of shifting National Herald and its assets from one company controlled by Congress leadership to another company controlled by the same set of people. If the idea was to extinguish the rights of some shareholders, the party leadership could have bought those shares from the shareholders. After all, the shareholders in AJL were all Congressmen who

were allotted shares in the company on the basis of the sole criteria that they were trusted members of the larger Congress family. The National Herald case is cited by Congress leaders as one of the many blunders that has brought the party to its present state.

In a battle between Mukesh Ambani and Sunil Bharti Mittal on one side, and Google, Meta, Microsoft, Amazon, TCS, etc on the other, the government of India has ruled in favour of the latter. When the government decided to auction spectrum for 5G services, three telecom service providers (TSPs) of India namely Reliance Jio owned by Mukesh Ambani, Airtel owned by Sunil Bharti Mittal, and Vodafone Idea, had demanded that spectrum be allocated exclusively to the TSPs and all other users be directed to obtain spectrum on lease from them. The global and Indian tech giants, however, lobbied hard to be allowed to participate in the spectrum auction and buy spectrum directly from the government for their captive use.

In the Notice Inviting Application (NIA) issued earlier this week for participating in spectrum auction for 5G services, the government allowed "enterprises" (read large companies or corporations with high demand of internet) to set up "Captive Non-Public Network" (CNPN). Para 2.4 of the NIA, June 2022, among other things, says: "Enterprises setting up CNPNs may obtain the spectrum directly from DoT and establish their own isolated network…" With this policy announcement, the government has potentially taken away a huge number of high revenue clientele from Reliance Jio, Airtel and Vodafone Idea. This is because the tech giants that are big consumers of the internet would buy spectrum directly from the government which may turn out much cheaper for them than buying from the telecom service providers. They were lobbying with the government for this permission through associations as well as directly. The Union government's decision is seen as a big blow to Mukesh Ambani and Sunil Bharti Mittal, who were also snubbed over the reserve price of spectrum for 5G. The Indian TSPs are clearly facing headwinds.

https://www.newindianexpress.com/nation/2022/jun/20/power-games-israel-seeks-closer-g2g-and-private-partnerships-2467575.html

Hindustan Times

Mon, 20 Jun 2022

Gearing up for Aerospace and Defence Policy: Karnataka Minister Nirani

The Karnataka government is already preparing for the new Aerospace & Defence Policy (2022-27), which aims to facilitate investments in these sectors and bring in fresh capital into the southern state, minister for large and medium industries, Murugesh Nirani, said on Sunday. "The defence ministry has set (a) target of 70% self-reliance in weapons by 2027, creating huge prospects for industry players," Nirani said. The minister, in a statement, said that this policy aimed to attract investments to the tune of ₹60,000 crore (around $6 billion) in the aerospace & defence sector during the policy period of five years.

He added that this would create additional employment opportunities, with the potential to generate 70,000 new jobs, and develop the state as a manufacturing hub, including MROand

space applications for both Indian and export markets. “India’s current market size of approximately $7 Bn is expected to grow at a CAGR of 7.5% to reach $15 Bn by 2032, presenting a significant opportunity for defence electronics players in India to capitalise upon. Karnataka contributes (a) a major share of 40% of defence electronics systems/products,” the minister added. Karnataka hosts several defence majors, including Hindustan Aeronautics Limited (HAL), National Aerospace Laboratories (NAL), Indian Space Research Organisation (Isro), and Bharat Heavy Electricals Limited (BHEL), and several labs of the Defence Research and Development Organisation (DRDO), among others.

“Electronics is the primary capability in modern warfare systems with a value contribution being more than 40% across leading platforms. The growth in demand for electronics in Indian A&D is driven by modernisation of weapon platforms, the introduction of state-of-art weapons, impact of indigenization and make in India initiative,” Nirani said. The government said that it will develop five aerospace and defence hubs in Bengaluru, Belagavi, Mysuru, Tumakuru & Chamarajanagara districts. “The policy promotes for A&D parks which will have comprehensive infrastructure facilities including roads, captive power generation, water supply, facilities for R&D, common training facilities, common warehouse facilities, plug-n-play facilities like manufacturing complex and built-in space for all precision manufacturing companies, government ITIs to provide courses about the A&D sector to create a strong pool of talent for the companies setting up their units within the parks,” Nirani said.

The industries department said it is already developing Phase 2 of the A&D park near Haralur, around Bengaluru International Airport over 1,200 acres. “Lack of accessible testing infrastructure is the main impediment for the domestic A&D production units. The DTIs will be set up under the private sector with government assistance,” he added.

https://www.hindustantimes.com/cities/bengaluru-news/gearing-up-fr-aerospace-and-defence-policy-karnataka-minister-nirani-101655664936968.html

THE ECONOMIC TIMES

Fri, 17 Jun 2022

China Launches Third, Most Advanced & Domestically Built Aircraft Carrier

Beijing: China on Friday launched its third aircraft carrier, the country's most advanced as well as the first "fully domestically built" naval vessel, as an aggressive Beijing sought to extend the range of its navy in the strategic Indo-Pacific region. The aircraft carrier named 'Fujian' was launched at a brief ceremony held at the Shanghai's Jiangnan Shipyard, the official media reported from the eastern metropolis. The Fujian is China's first domestically designed and built catapult aircraft carrier, state-run Xinhua news agency reported. The launch of the ship was delayed by two months due to the COVID lockdown of Shanghai. It was due to be launched on April 23 around the 73rd anniversary of the People's Liberation Army Navy (PLAN). The 3rd aircraft carrier built by China State Shipbuilding Corporation Limited has a

displacement of more than 80,000 tonnes and is equipped with electromagnetic catapults and arresting devices. Fujian is the name of China's eastern coastal province of Fujian. China's first aircraft carrier, the 'Liaoning', was a refit of the Soviet-era ship commissioned in 2012 followed by the indigenously built 2nd aircraft carrier 'Shandong' in 2019. Liaoning and Shandong are names of two provinces of China. China plans to have around five aircraft carriers, according to the official media. The next aircraft carrier China plans to build is expected to be nuclear-powered. The ship Fujian was launched at a “short but festive” ceremony, the daily report said.

A launch and naming ceremony was held at about 11 am, when the naming certificate of the vessel was given to the top officer to receive delivery of the aircraft carrier. Officials then cut the ribbon marking the launch of the third aircraft carrier, after which the vessel left the dock, concluding the ceremony. The Fujian, which is the "first fully domestically developed and constructed" aircraft carrier with catapults, has a flat, straight flight deck equipped with electromagnetic catapults and arresting devices, and has a full displacement of more than 80,000 tonnes, the report said. After the launch, the carrier will start mooring trials and sea trials. China's naval buildup comes amid growing geopolitical tensions with the US, which under President Joe Biden is seeking to strengthen ties with allies and partners in the Asia-Pacific region to counter Beijing's growing economic influence and military might.

Fujian, in the southeast, is the closest province to Taiwan, a self-ruling province that China says must be reunified with the mainland, even by force. Last week, China's Defence Minister General Wei Fenghe accused the US of supporting the island's independence, saying it was "violating its promise on Taiwan" and "interfering" in China's affairs. Wei reportedly told US Defence Secretary Lloyd Austin that China would "resolutely crush any attempt" at Taiwan's independence. Meanwhile, the official media reported that the Type 003 warship with a hull number of 18, is the first carrier in China's fleet to use an electromagnetic catapult to launch planes from the deck, which is faster than the older steam catapult system. Political slogans written in large white Chinese characters against a red background were attached to shelters on the deck, apparently, to protect the catapults, the Hong Kong-based South China Morning Post reported. “Deliver combat power – fighting to fully build a world-class navy,” read a banner.

The advanced catapult system, called the electromagnetic aircraft launch system (EMALS), is more energy-efficient and reduces maintenance. It is used also on the US Navy's Gerald R. Ford-class carriers, the Post reported. Unlike China's other two aircraft carriers, which are equipped with ski-jump take-off ramps, the Fujian features a flat-top flight deck. State-run CCTV said the testing of the carrier's mooring and navigation systems will be the first priority after Friday's launch. Recent reports, however, said the speedy launch of the aircraft carriers is resulting in technical issues and repairs delaying their operational readiness. China's first aircraft carrier, the Liaoning, is so far the only Chinese aircraft carrier with the initial operational capability or the basic level of combat readiness. Chinese President Xi Jinping, who heads the military besides the ruling Communist Party of China, has carried out extensive reforms of the military, including downsizing the Army and enhancing the role of the Navy and Air force as Beijing set its sights on global expansion with military bases in Djibouti in the Horn of Africa. China has also taken over Sri Lanka's Hambantota port for a 99-year lease and expanded and modernised Pakistan's Gwadar port in the Arabian Sea.

China is engaged in hotly contested territorial disputes in both the South China Sea and the East China Sea. Beijing has built up and militarised many of the islands and reefs it controls in the

region. Both areas are stated to be rich in minerals, oil and other natural resources and are vital to global trade. China claims almost all of the South China Sea. Vietnam, the Philippines, Malaysia, Brunei and Taiwan have counter claims over the area.

https://economictimes.indiatimes.com/news/defence/china-launches-third-aircraft-carrier-fujian-state-media/articleshow/92272257.cms

Hindustan Times

Fri, 17 Jun 2022

China Launches Third Aircraft Carrier in Major Military Milestone

The launch of the new carrier called Fujian -- named after the coastal province -- comes against the backdrop of China's push for maritime influence in the far seas and as its warships attempt to leave their mark in Pacific and Indian Ocean regions In this image taken from video footage run by China's CCTV, sailors applaud as China's third aircraft carrier christened Fujian is launched at a dry dock in Shanghai on Friday, June 17, 2022. State media reported that China on Friday launched its third aircraft carrier, the first such ship to be both designed and built entirely within the country. Chinese characters on screen reads "Our country's third aircraft carrier launched into water, named Fujian". (AP)

China on Friday launched its third aircraft carrier in Shanghai, state media reports said, the first designed and built entirely in the country. The launch of the new carrier called Fujian -- named after the coastal province -- comes against the backdrop of China's push for maritime influence in the far seas and as its warships attempt to leave their mark in Pacific and Indian Ocean regions. The launch ceremony was held at the Jiangnan Shipyard of China State Shipbuilding Corporation on Friday morning. Xu Qiliang, member of the Communist Party of China's (CPC) central committee political bureau and the vice chairperson of the powerful Central Military Commission (CMC), attended the ceremony.

Fujian, with the hull number "18", is China's first catapult-type aircraft carrier to launch fighter aircraft from its deck. In late April, the Chinese People's Liberation Army (PLA) Navy released a promotional video on China's aircraft programme, in which it implied that the country's third aircraft carrier will be officially revealed soon. "Although it will be years before the Type 003 (the new carrier) enters military service and achieves initial operating capability, its launch will be a seminal moment in China's ongoing modernisation efforts and a symbol of the country's growing military might," the Washington-based Centre for Strategic and International Studies (CSIS), had reported about Fujian – then unnamed – earlier this month. China for the first time officially acknowledged it was building a third aircraft carrier, expected to be "bigger and mightier" than the first domestically-built one in November 2018.

The "Fujian" is part of China's heavily guarded "new generation carrier" programme, which aims at building the ships indigenously. "In addition to being the largest of its three carriers, the new Type 003 class is fitted with a catapult launch system that will "enable it to support additional fighter aircraft, fixed-wing early-warning aircraft, and more rapid flight operations

and thus extend the reach and effectiveness of its carrier-based strike aircraft," the US defence department said in its annual report to Congress on China's military in November. China has the largest navy in the world in terms of numbers of ships but does not yet have the capabilities of the US Navy. Among other assets, the US Navy remains the world's leader in aircraft carriers, with its forces able to muster 11 nuclear-powered vessels. The Navy also has nine amphibious assault ships, which can carry helicopters and vertical take-off fighter jets as well, an Associated Press report said.

https://www.hindustantimes.com/world-news/china-launches-third-aircraft-carrier-in-major-military-milestone-101655455286880.html

Science & Technology News

The Statesman

Sun, 19 Jun 2022

SpaceX Launches 3 Rockets in 36 Hours

SpaceX has launched and landed three rockets in a span of 36 hours, media reports said. A two-stage Falcon 9 rocket was launched from Florida's Cape Canaveral Space Force Station on Sunday (June 19) at 12:27 a.m. EDT, carrying a communications satellite for the Louisiana-based company Globalstar to orbit, Space.com reported. "Congrats to SpaceX Falcon team for executing 3 flawless launches in 2 days!" CEO and Founder Elon Musk shared in a tweet. The satellite wasdeployed into orbit about 1 hour and 50 minutes after launch. "Deployment of Globalstar FM15 confirmed," SpaceX said in a tweet.

On June 17, the company launched 53 of its Starlink internet satellites from NASA's Kennedy Space Center in Florida and lofted a radar satellite for the German military from Vandenberg Space Force Base in California on June 18. The Friday mission set a new rocket-reuse record for SpaceX; the Falcon 9 that flew it featured a first stage that already had 12 launches under its belt. The launch on Sunday was the ninth for this particular Falcon 9 first stage, according to a SpaceX mission description. The triple-launch is the second this year, after the company flew three missions between January 31 and February 3.

https://www.thestatesman.com/technology/spacex-launches-3-rockets-36-hours-1503082416.html

Sat, 18 Jun 2022

New Photonic Materials Could Enable Ultra-Fast Light-Based Computing

Photonic materials are being developed by researchers to allow for powerful and efficient light-based computing Researchers at the University of Central Florida are developing new photonic materials which may one day be used to enable ultra-fast, low-power light-based computing. The unique materials referred to as topological insulators, resemble wires that have been flipped inside out, with the insulation on the inside and the current flowing along the exterior. In order to avoid the overheating issue that today's ever-smaller circuits encounter, topological insulators could be incorporated into circuit designs to enable the packing of more processing power into a given area without generating heat. The researchers' most recent study, which was published on April 28 in the journal Nature Materials, presented a brand-new process for creating the materials that make use of a unique, chained honeycomb lattice structure. The linked, honeycombed pattern was laser etched onto a piece of silica, a material often used to create photonic circuits, by the researchers. The design's nodes enable the researchers to regulate the current without bending or stretching the photonic wires, which is required for directing the flow of light and thus information in a circuit.

The new photonic material overcomes the drawbacks of contemporary topological designs that offered fewer features and control while supporting much longer propagation lengths for information packets by minimizing power losses. The researchers envision that the new design approach introduced by the bimorphic topological insulators will lead to a departure from traditional modulation techniques, bringing the technology of light-based computing one step closer to reality. Topological insulators could also one day lead to quantum computing as their features could be used to protect and harness fragile quantum information bits, thus allowing processing power hundreds of millions of times faster than today's conventional computers. The researchers confirmed their findings using advanced imaging techniques and numerical simulations. "Bimorphic topological insulators introduce a new paradigm shift in the design of photonic circuitry by enabling secure transport of light packets with minimal losses," says Georgios Pyrialakos, a postdoctoral researcher with UCF's College of Optics and Photonics and the study's lead author.

The next steps for the research include the incorporation of nonlinear materials into the lattice that could enable the active control of topological regions, thus creating custom pathways for light packets, says Demetrios Christodoulides, a professor in UCF's College of Optics and Photonics and study co-author. The research was funded by the Defense Advanced Research Projects Agency; the Office of Naval Research Multidisciplinary University Initiative; the Air Force Office of Scientific Research Multidisciplinary University Initiative; the U.S. National Science Foundation; The Simons Foundation's Mathematics and Physical Sciences division; the W. M. Keck Foundation; the US–Israel Binational Science Foundation; U.S. Air Force Research

Laboratory; the Deutsche Forschungsgemein-schaft; and the Alfried Krupp von Bohlen and Halbach Foundation.

Study authors also included Julius Beck, Matthias Heinrich, and Lukas J. Maczewsky with the University of Rostock; Mercedeh Khajavikhan with the University of Southern California; and Alexander Szameit with the University of Rostock. Christodoulides received his doctorate in optics and photonics from Johns Hopkins University and joined UCF in 2002. Pyrialakos received his doctorate in optics and photonics from Aristotle University of Thessaloniki – Greece and joined UCF in 2020.

https://scitechdaily.com/new-photonic-materials-could-enable-ultra-fast-light-based-computing/