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# समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO  
Technologies, Defence Technologies, Defence Policies,  
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## DRDO chief lauds woman defence scientists



A morning walk organised by DRDO sports board at Marine Drive as a part of the Women's Day 2022 celebrations to create fitness awareness among the women scientists. | Photo Credit: SPECIAL ARRANGEMENT

Women have made substantial strides in defence research being spearheaded by the Defence Research and Development Organisation (DRDO), with three women directors general, three others as directors of major defence laboratories, and another three serving as corporate directors at the agency's headquarters, G. Satheesh Reddy, Chairman of DRDO and Secretary, Department of Defence Research and Development, told the media here on Thursday.

"Many other women [scientists] are heading critical projects, including those dealing with missiles and bombs. The Naval Physical and Oceanographic Laboratory (NPOL) - Kochi too has

many woman project directors, while woman scientists of the DRDO also travel on board ships, submarines, and to frontier areas,” he said on the sidelines of the International Women’s Day 2022 celebrations (‘Shakti’) organised here by the DRDO. Outstanding woman defence scientists were honoured at the event hosted by the NPOL. Around 250 woman scientists from across the country attended the event, which saw discussions on how women could contribute to augmenting defence technology and create a better working environment in the research and development field.

Mr. Reddy said the DRDO was working on new technologies, including Helina, an indigenously developed anti-tank guided missile that was tested from high altitude. “Yet another technology is the high-capacity, indigenous, long range 155-mm gun, whose final trial is under way at Pokhran. The DRDO is trying to be the world leader in defence technologies. Similarly, Rustom-2 [the indigenous unmanned aerial vehicle] is going through the final trials. We will be able to see whether it is meeting all requirements, by May. We are constantly assessing emerging technologies globally,” he added.

“Artificial Intelligence [AI] has been introduced in all system labs of the DRDO, and AI will be part of every system. India is one among the few nations that have developed anti-drone technology and demonstrated it. The technology has been transferred to Bharat Electronics Ltd [BEL] and a few private agencies. Subsequently, the armed forces and security agencies have begun placing orders,” he said.

On its part, the NPOL-Kochi is leading in developing sonars and sea situation awareness. A lot of science and technology is happening in the lab, which is one of the frontier such facilities in the world. The lab will get a lot more new facilities, including for testing and instrumentation. It is poised to work on next-generation technologies for the ‘underwater domain’, Mr. Reddy said.

Former Chief Postmaster General (Kerala) and former Chairperson of the Kerala State Commission for Protection of Child Rights, Shoba Koshy, congratulated the DRDO’s woman scientists in its 52 labs and other delegates on their achievements and their endeavour in helping the country achieve self-reliance in defence. She called for steps to sensitise people about violence and bias women and children faced, including at home. “Working women are often worried about the safety and well-being of their children and of having to balance household chores with profession,” she said.

The event marked the culmination of month-long activities in connection with the International Women’s Day observance at NPOL, the sole DRDO laboratory in Kerala. NPOL Director S. Vijayan Pillai and M. Rema Devi, convener of the event, were among those who spoke. The event included a team-building workshop, technical sessions, invited talks and panel discussions, including on ‘Emotional intelligence and balance’ and ‘In pursuit of passion’. The technical session concluded with Mr. Reddy releasing a compendium of selected technical articles written by women scientists of the DRDO.

<https://www.thehindu.com/news/national/kerala/drdo-chief-lauds-woman-defence-scientists/article65320807.ece>

## Defence platforms of DRDO to use AI



*Photo credit: Times of India*

Artificial intelligence (AI) will have a major role in defence technology and all defence platforms to be developed by the Defence Research and Development Organisation (DRDO) in the future will make use of AI, said DRDO chairman and secretary of department of defence research and development (DD R&D), G Satheesh Reddy.

Addressing mediapersons in Kochi after inaugurating the International Women's Day (IWD-2022) celebrations, Shakti, organized by DRDO's Naval Physical & Oceanographic Laboratory (NPOL), Reddy said that anti-drone technology, which is the need of the hour, has been successfully demonstrated by the organization and the transfer of technology (ToT) to multiple agencies is complete.

"DRDO's priority is to become a leader in developing advanced technologies. AI has been introduced in all DRDO labs and it will be part of every system that comes out of DRDO in future. India is one among the few nations that have successfully developed and demonstrated anti-drone technology. The armed forces and security agencies have started placing orders to get the systems installed for them. Lot of trials too are underway with regard to anti-drone technologies," Reddy said.

Lauding the efforts and contribution of women scientists in the defence research and development under DRDO, Reddy said that their service has been valuable and women's participation is increasing in defence projects.

“Now, DRDO has three women directors general. Also, three women are serving as directors of major defence laboratories, and another three women are serving as corporate directors at the agency’s headquarters,” he said.

The event marked the conclusion of month-long activities connected with the International Women’s Day and was attended by over 250 women from all 52 laboratories and establishments of DRDO. Shoba Koshy, former chief postmaster general, Kerala Circle, and former chairperson of Kerala state commission for protection of child rights was the chief guest. S Vijayan Pillai, Outstanding scientist and director of NPOL, M Rema Devi, Scientist-G and convener IWD-2022, Nidhi Bansal, DRDO women’s forum president, etc also spoke at the event.

Later in the day, Reddy also visited startup incubator Maker Village in Kalamassery and interacted with leaders of startups working on technologies specifically for the defence sector.

<https://timesofindia.indiatimes.com/city/kochi/defence-platforms-of-drdo-to-use-ai/articleshow/90855303.cms>



Thu, 14 Apr 2022

## इंडियन आर्मी अर्जुन टैंक से कब दाग पाएगी मिसाइल? संसद की स्टैंडिंग कमेटी ने DRDO को दी ये सलाह

इंडियन आर्मी के लिए डीआरडीओ अर्जुन टैंक के नए वर्जन मार्क- 2 (Arjun Tank Mark 2A ) पर काम कर रहा है। हालांकि यह काफी वक्त से लटका हुआ है। अब संसद की रक्षा मामलों की स्टैंडिंग कमेटी ने डीआरडीओ को सुझाव दिया है कि इस पर तेजी से काम किया जाए क्योंकि कमेटी को यह लगता है कि इसके बिना आर्मी के लिए ये टैंक पूरी क्षमता से काम नहीं कर सकते।

स्वदेशी अर्जुन टैंक को इंडियन आर्मी ने मेन बैटल टैंक का दर्जा दिया है। आर्मी के पास अर्जुन टैंक के अलावा टी-72 और टी-90 टैंक हैं। ये दोनों ही टैंक रूस से लिए हैं। टी- 90 टैंक में मेन गन के बैरल से मिसाइल फायर की जा सकती है। हालांकि टी-72 और अर्जुन टैंक में यह क्षमता नहीं है। इंडियन आर्मी के पास जो अर्जुन टैंक हैं उनका नया वर्जन अर्जुन मार्क- 1A अभी प्रॉडक्शन स्टेज में हैं और जल्द ही आर्मी को मिल जाएंगे। ये पहले के टैंक से ज्यादा बेहतर हैं लेकिन इनमें भी मिसाइल फायर करने का प्रावधान नहीं है।

एक सीनियर अधिकारी ने कहा कि जब अर्जुन टैंक के नए वर्जन के आइडिया पर काम हो रहा था तब यह विचार था कि अर्जुन- मार्क 2 बनाया जाएगा जिसमें मिसाइल फायर करने का भी सिस्टम होगा, जैसा टी-90 टैंक में है। लेकिन 2018 में जब इसका रिव्यू किया गया तो पाया

कि मार्क-2 में पूरी क्षमता नहीं मिल पाएगी और फिर मार्क-1A पर काम किया गया। और इसमें मिसाइल के प्रावधान का विचार ड्रॉप कर दिया गया। पिछले साल फरवरी में अर्जुन मार्क- 1A को एक कार्यक्रम में प्रधानमंत्री नरेंद्र मोदी ने आर्मी चीफ जनरल एम एम नरवणे को सौंपा था। जिसके बाद सितंबर में आर्मी ने 118 अर्जुन मार्क-1A टैंक का ऑर्डर दिया है। इसमें पुराने अर्जुन टैंक से 72 नए फीचर हैं लेकिन मिसाइल फायर सिस्टम नहीं है।

एक सीनियर अधिकारी ने बताया कि डीआरडीओ अर्जुन-मार्क 2 पर काम कर रहा है और कुछ रेंज में ट्रायल सफल भी रहे। इसमें जो मिसाइल होगी वह स्वदेशी होगी। हालांकि सूत्रों के मुताबिक यह मिसाइल सेकंड जनरेशन मिसाइल होगी यानी टारगेट को लगातार ट्रैक करना होगा, यह फायर एंड फॉरगेट (फायर करो और भूल जाओ) मिसाइल नहीं होगी। दो साल पहले जब ईस्टर्न लद्दाख में एलएसी पर भारत-चीन के बीच तनाव शुरू हुआ था तब इंडियन आर्मी ने अपने टी-90 बैटल टैंक ईस्टर्न लद्दाख मूव किए। रूस के बने टी- 90 टैंक को भारत ने 2001 में लिया था।

<https://navbharattimes.indiatimes.com/india/standing-committee-of-parliament-asked-drdo-to-work-fast-on-new-version-mark-2-of-arjun-tank/articleshow/90852849.cms>



*Thu, 14 Apr 2022*

## **HELINA missile: Know all about India's indigenously developed anti-tank guided missile**

A second flight test of anti-tank guided missile HELINA was successfully launched at a high-altitude range on April 12 as part of user validation trials, the Defence Ministry said. The first flight test of HELINA was successfully done a day before, the ministry's statement said. The second successful trial was conducted in high altitude conditions in Ladakh. Both the flight trials were conducted from an Advanced Light Helicopter (ALH) Dhruv chopper and the missile was fired successfully engaging a simulated tank target. The flight test was jointly conducted by the teams of scientists of the Defence Research and Development Organisation (DRDO), the Indian Army and the Indian Air Force, as part of the user validation trials. The tests were witnessed by senior Army commanders and senior scientists of the DRDO. Defence Minister Rajnath Singh, Secretary of Department of Defence Research and Development (R&D) and chairman, DRDO, G Satheesh Reddy, applauded the teams for the commendable job performed in difficult conditions.

### **About HELINA missile**

HELINA (Helicopter based NAG) is a third-generation fire and forget class antitank guided missile (ATGM) system. The missile is one of the most advanced anti-tank weapons in the world. It has been designed to launch from the Advanced Light Helicopter (ALH).

The missile is guided by an Infrared Imaging Seeker (IIR) operating in the lock-on-before-launch mode. The missile has all-weather day and night capability and can defeat battle tanks with conventional armour as well as explosive reactive armour.

It can engage targets both in direct hit mode as well as top attack mode. HELINA weapon systems are being inducted into the Indian Army (IA). A variant of HELINA weapon system called DHRUVASTRA is being inducted into the Indian Air Force (IAF). It can hit a target at a minimum range of seven km. Eight HELINA missiles can be integrated on to ALH-WSI (Rudra), four on either side. Anti-Tank missiles Anti-Tank Guided Missiles (ATGMs) are guided missiles designed primarily to destroy or damage heavily armoured vehicles and tanks. They use various guiding algorithms like wire-guided missiles, laser guide guided missiles, etc. There are various ranges of missiles depending on the size, starting from shoulderlaunched weapons, that can be transported by a single soldier, to vehicle and aircraft mounted missile systems. Anti-Tank missile developed by India DRDO Anti-Tank Missile (DRDO ATM) was the 1st Generation Indian Anti-Tank missile developed by the DRDO using wire-guided guidance technology. About Nag missile The Nag missile, also known as Prospina, is an Indian third-generation, all-weather, fire-and-forget, lock-on after launch, anti-tank guided missile (ATGM). The land-attack version of the missile has an operational range of 500 m to 20 km.

<https://www.news9live.com/knowledge/world-heritage-day-2022-all-you-need-to-know-165150?infinitescroll=1>

## DRDO On Twitter



At an event held at #NPOL Kochi, Chairman DRDO highlighted the pioneering role being played by women in Defence R&D in scientific & other domains. He encouraged women to fulfill Hon'ble PM's vision of #NariShakti at the forefront of India's journey towards #AatmaNirbharta.



6:12 PM · Apr 14, 2022 · Twitter for iPhone



Accelerating the indigenous developments through synergistic efforts of all stakeholders. Strengthening the vision of Make in India. #ProgressiveIndianIndustry #AtmaNirbharDefence @PMOIndia @SpokespersonMoD @DefenceMinIndia



Society of Indian Defence Manufacturers

2:03 PM · Apr 14, 2022 · Twitter for iPhone





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*Thu, 14 Apr 2022 10:56 AM*

### **20th India-France Joint Staff talks held in Paris**

The 20<sup>th</sup> edition of India-France Joint Staff talks was held in Paris, France on April 12-13, 2022. The meeting was co-chaired by Assistant Chief of Integrated Staff, Int-C (Military Cooperation), Headquarters, Integrated Defence Staff (HQ IDS) Air Vice Marshal B Manikantan and Head of Bilateral Cooperation South/Staff HQ Brigadier General Eric Peltier.

The meeting was conducted in a friendly, warm and cordial atmosphere. The discussions focused on new initiatives under the ambit of existing bilateral defence cooperation mechanism and strengthening ongoing defence engagements.

The India-France Joint Staff talks is a forum established to enhance defence cooperation between both the nations through regular talks at the strategic and operational levels.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1816663>



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*Fri, 15 Apr 2022 10:44 AM*

### **IAF Pays Tribute to the Marshal of Air Force Arjan Singh DFC**

Today, Indian Air Force pays tribute to the legendary air warrior, Late Marshal of Air Force Arjan Singh DFC on his 103rd birth anniversary. On this day, we recall the contribution made by the Marshal to the nation and Indian Air Force.

Marshal of the Air Force Arjan Singh was born on 15 April 1919 in Lyallpur (now Faisalabad in Pakistan). At the age of 19 years, he was selected for training at RAF College, Cranwell and was commissioned into Royal Indian Air Force as a Pilot Officer in December 1939. He was awarded Distinguished Flying Cross (DFC) for outstanding leadership, great skill and courage in the Burma Campaign, during World War II. On 15 August 1947, when India gained Independence, he was given the unique honour of leading the fly-past of more than a hundred IAF aircraft over the Red Fort in Delhi. On 01 August 1964, Arjan Singh took over as the Chief of the Air Staff (CAS) in the rank of Air Marshal at the age of 44.

A testing time for the nation came in September 1965 when Pakistan launched Operation Grand Slam, in which an armoured thrust targeted the vital town of Akhnur. When summoned to the Defence Minister's office with a request for air support and asked how quickly the IAF will be ready for operations, with his characteristic nonchalance, "...in an hour" was the reply. And truly, the Indian Air Force struck the Pakistani offensive in an hour, gained air superiority over Pakistan Air Force (PAF) and helped Indian Army score strategic victories.

He was awarded the Padma Vibhushan for his leadership during the 1965 War. Arjan Singh became the first Air Chief Marshal of the Indian Air Force. After retiring in July 1969 he continued to contribute immensely for the betterment and welfare of IAF. He also continued his service to the nation as the Ambassador to Switzerland, the Holy See and Liechtenstein from 1971 to 1974, following which he headed the High Commission of India to Kenya at Nairobi from 1974 to 1977. He also served as a member of The Minorities Commission of India from 1978 to 1981 and as the Lt Governor of Delhi from 1989 to 1990.

In recognition of his services, the Government of India conferred the rank of the Marshal of the Air Force on to Arjan Singh in January 2002 making him the first 'Five Star' rank officer of the Indian Air Force. To commemorate his contribution to the IAF, Air Force Station Panagarh was renamed as Air Force Station Arjan Singh in 2016.

His dynamic personality, professional competence, leadership and strategic vision sets him apart as an icon of the Indian Air Force.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1816949>



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**Ministry of Defence**

*Sun, 17 Apr 2022 1:56 PM*

## **Army Commanders' Conference Scheduled from 18 to 22 April 2022 at New Delhi**

Army Commanders' Conference is scheduled from 18-22 April 2022 at New Delhi. Army Commanders' Conference is an apex level biannual event which is held in April and October every year. The conference is an institutional platform for conceptual level deliberations, culminating in making important policy decisions for the Indian Army.

During the conference, the senior leadership of the Indian Army will review the operational situation along the active borders, assess threats in the entire spectrum of conflict and undertake analysis of capability voids to further focus on capability development & operational preparedness plans. Discussions on aspects pertaining to infrastructure development in border areas, modernisation through indigenisation, induction of Niche tech and assessment on any impact of the Russia - Ukraine war are also scheduled.

Various agenda points sponsored by regional commands will be deliberated upon by the senior commanders apart from proposals concerning improving works, financial management, introducing e-vehicles, and digitisation in the Indian Army. As part of the conference, Boards of Governors meetings of the Army Welfare Education Society (AWES) and Army Group Insurance Fund (AGIF) will be organised.

The Hon'ble Raksha Mantri Shri Rajnath Singh is expected to interact with the senior commanders and address the Conference on 21 April 2022. The conference is also a formal forum for senior leadership of Indian Army to interact with the senior functionaries of the Department of Military Affairs and Department of Defence during the MoD Interaction Session.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1817536>



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*Sun, 17 Apr 2022:13PM*

## **Completion of Sail Training Capsule for Republic of South Africa Navy (RSAN) Officers**

Indian Navy conducted a Sail Training capsule of three weeks duration for officers trainees (Sub Lieutenants) of Republic of South Africa Navy (RSAN) at Ocean Sailing Node (OSN) of Indian Navy at INS Mandovi, Goa from 28 Mar 22 to 16 Apr 22.

The training programme was conducted under the aegis of Indian Naval Sailing Association (INSA) which is the apex organisation at IHQ MoD (Navy) with respect to sail training. The training was conducted onboard Indian Naval Sailing Vessel (INSV) Tarini which had circumnavigated the globe with an all-women crew from Sep 2017 to May 2018.

The 20 days training comprised of harbour and sea phases of 10 days each covering aspects of sailing theory and sea sorties including night sorties.

Treading the oceans under sails is an extremely challenging activity which not only enhances risk taking abilities but also hones essential skills including seamanship, navigation, communication and technical operations onboard. The training was thus aimed at fostering the spirit of adventure for the participating crew and strengthening the ties between the two friendly nations across the oceans. The training also aimed to instill the "indefinable 'sea-sense' and respect for elements of nature, which are inseparable from safe and successful seafaring".

With the successful progress of the programme, the Indian Navy is committed to offer more such customized Ocean Sail Training Courses in the future. The Indian Navy believes that training onboard these vessels is the best method of imparting the values of courage, camaraderie and esprit-de-corps among budding naval officers.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1817607>

THE  HINDU

*Fri, 15 Apr 2022*

## **Navy accelerates indigenisation efforts, focus on weapons and aviation items**

The Navy which has taken an early lead towards indigenisation decades ago and in 2014 promulgated the Indian Navy Indigenisation Plan (INIP) 2015-2030 to enable indigenous development of equipment and systems is further ramping up indigenisation efforts especially in weapons and aviation related items. This falls in line with the Government's push to cut down on defence imports and boost domestic manufacturing which has gained further urgency due to ingoing Russian war in Ukraine and the large scale dependency of Indian military on Russian arms and equipment.

“Till date, Navy has indigenised around 3400 items under INIP, including over 2000 machinery and electrical spares, over 1000 aviation spares and over 250 weapon spares. The existing Naval Aviation Indigenisation Roadmap (NAIR) 2019-22 is also under revision. All fast moving aircraft mandatory spares and high cost indigenous repairs are being included in the revised NAIR 2022-27,” one official said.

There is particular focus on the fight component (which is weapons) as there is still a long way to go compared to the float and move components, the official stated. Float consist of the ship, move comprises the propulsion and fight consist of weapons and sensors.

“The Navy has a head start. Several initiatives have been taken early on,” a Navy official noted in this regard.

Towards this, four in-house indigenisation committees have been formed to handle indigenisation of spares with respect to naval aircraft. In addition, the Naval Liaison Cells (NLCs) located at various places have been nominated as ‘indigenisation cells’.

There are currently 41 ships and submarines under construction, 39 are being built in India shipyards while in principle approval from MoD exists for 47 ships to be built in India, the Navy has stated earlier. Since 2014, 78 % of Acceptance of Necessity (AoN), by value, and 68 % of contracts, by value, have been awarded to Indian vendors, officials said.

The Navy is working with the Defence Research and Development Organisation (DRDO) and the industry to cut down developmental timelines, the official cited above said. “Start-ups and Micro, Small and Medium Enterprises (MSME) are doing a great job.”

Some of the focus areas include indigenous design and development and production of Anti-Submarine Weapons and sensors, Satcom and electronic warfare equipment, Anti-Ship Missiles and Medium Range Surface to Air Missile, combat management system, software defined radios,

network encryption devices, Link II communication system, main batteries for submarines, distress sonar system, components of missiles and torpedoes etc.

The Naval Innovation and Indigenisation Organisation (NIIO) which was launched by Defence Minister Rajnath Singh in August 2020 provides a flexible and accessible interface for academia and industry with Indian Navy capability development apparatus, officials said.

In the last two years, 36 IPR (Intellectual Property Rights) applications have been filed by Navy personnel. Over two IPR applications are filed every month since the creation of NIIO and Transfer of Technology to 12 MSMEs has already been undertaken,” another defence official said.

Navy has now forward deployed user inputs through Naval Project Management Teams at cluster Headquarters of DRDO and two such clusters are already operational. These have interfaced with the DRDO labs and their Development cum Production Partners (DcPP) to provide user inputs at every stage to 15 futuristic Technology and 100 plus DRDO projects underway for development of Indian Navy’s combat capability, the official added.

The Navy has more than 20 Make I & Make II cases being progressed, under various domestic development routes of the procurement procedure.

Comparing the highly skilled and technology intense warship production compared to commercial ship building, Navy Chiefs in the past had stated that manpower employed for constructing a commercial ship of about 30,000 tonnes is less than the manpower employed in warship construction of about 6,000 tonnes. In addition, statistics show that the multiplier effect of one worker employed in a shipyard is approximately 6.4 on ancillary industries, a senior officer said in the past.

<https://www.thehindu.com/news/national/navy-accelerates-indigenisation-efforts-focus-on-weapons-and-aviation-items/article65324255.ece>



*Sat, 16 Apr 2022*

## **To boost Make in India, IAF cancels plans to buy 48 Mi-17 choppers from Russia**

Aiming to support the Make in India initiative in the Defence programme of Prime Minister Narendra Modi, the Indian Air Force has decided to cancel plans to buy 48 more Mi-17 V5 helicopters from Russia.

Top government sources told India Today that the decision to withdraw the tender for the 48 helicopters that was taken much before the conflict between Russia and Ukraine broke out and has nothing to do with the global scenario.

“The tender for 48 Mi-17V5 helicopters has been withdrawn in view of the push for indigenisation. The IAF would now be supporting an indigenous programme for helicopters,” the sources said.

India has been strongly working towards indigenisation in the defence sector and has put on hold or cancelled a large number of contracts for imports in the recent past, the sources said. The Mi-17V5 is produced and manufactured in Kazan, a city in southwest Russia. It is a modern military transport helicopter used by the Indian Air Force.

These helicopters are part of a larger family of high-performance and multipurpose Mi-17s that can fly at high altitudes in complex weather conditions, be it in tropical and maritime climates or even in desert conditions.

Mi-17s are manufactured at Kazan Helicopters, a subsidiary of state-owned helicopter design and manufacturing company called Russian Helicopters.

<https://www.indiatoday.in/india/story/make-in-india-iaf-mi-17-choppers-russia-1938341-2022-04-16>



*Sun, 17 Apr 2022*

## **IAF to order more Advanced 'RUDRA' Attack Gunships**

Impressed with the performance of the armed version of the Advanced Light Helicopter (ALH), the Indian Air Force (IAF) is planning to buy more such copters for high-altitude operations in the Himalayas and the desert sector on the western front.

The copter, which is called the DHRUV Mark-IV version and is known by its military name 'Rudra', was used in Eastern Ladakh during the stand-off with China. The IAF has one squadron of 14 to 16 copters and is looking to get at least three more squadrons. The Army also operates the 'Rudra'.

A senior functionary said that “more Rudra are being purchased and a case is being moved to the Ministry of Defence”. The copter did “very well” in the sub-sector north (SSN) — the military name for high-altitude plateau and sensitive Depsang plateau in Northern Ladakh, the functionary added.

Helipads in these locations are at an altitude of more than 15,000 ft.

Produced by state-run Hindustan Aeronautics Limited (HAL), the copters are adapted for high altitudes and powered by 'shakti engines' that can take it to 20,000 ft. The engine is designed and made under a joint venture between Safran of France and the HAL.

The weapon fitment on DHRUV MK-IV includes a 20 mm turret gun, 70 mm rocket pods and air-to-air missile. The copter is expected to be equipped with the newly made anti-tank missile, Helina.

The copter can be used for anti-tank warfare and close air support for ground troops. The maximum take-off weight of the helicopter is 5,500 kg and it can carry a payload of 2,600 kg.

The helicopter has multifunctional displays and an automatic flight control system for pilots.

<http://www.indiandefensenews.in/2022/04/iaf-to-order-more-advanced-rudra-attack.html>

**THE ECONOMIC TIMES** |

*Sat, 16 Apr 2022*

## **Delivery of second S-400 squadron could see a slight delay due to Russia-Ukraine war**

There is a slight delay in the delivery of the second S-400 squadron from Russia owing to the war with Ukraine, a defence ministry source told Times of India. The report said that Russia has delivered simulators and other training equipment for the air defence system. The IAF will get five S-400 squadrons from Russia at an interval of six months. The first S-400 was delivered in December.

The IAF has deployed the first S-400 squadron on the Western front.

The delivery of S-400 will add more heft to India's defences against both the adversaries - Pakistan and China. The system is capable of taking down targets from a distance of over 400 km. The \$ 5.43 billion was inked in 2018, with deliveries scheduled from 2021.

<https://economictimes.indiatimes.com/news/defence/delivery-of-second-s-400-squadron-could-see-a-slight-delay-due-to-russia-ukraine-war/articleshow/90873442.cms?from=mdr>

 **THE NEW  
INDIAN EXPRESS**

*Sun, 17 Apr 2022*

## **Ukraine war may hit India's defence plans**

The protracted conflict in Ukraine is likely to have negative implications on India's defence preparedness. It is feared that there could be delays in procuring new defence systems as well as spares for the existing Russian-origin equipment due to the complexities involved in the payment system.

With Western nations clamping severe economic sanctions on Putin's Russia, India will have to rely on the much-expected Rouble-Rupee currency trade system to make defence payments. Defence analyst Maj Gen SB Asthana (Retd) says the war may lead to delays in receiving spares from Russia. "Even though we are trying to ward off the sanctions, the threat looms large. There are deeper implications of such delays," he says.

Around 70 per cent of the defence systems and equipment of Indian armed forces are of Russian origin. The Indian Air Force operates a variety of Russian-origin fighters like Sukhoi-30 MKI

and MiGs, transport aircraft like Ilyushin and Mi-series helicopters. The Army's mechanised forces, tanks and amphibious vehicles are Russian-manufactured. The Navy has a large number of warships, submarines and maritime strike fighter MiG-29K of Russian origin.

The purchase of new equipment and systems, which are in the pipeline, could also face delays. Two of the four 4,000 ton Talwar Class guided missile frigates being procured by the Navy will be built in Russia.

The Navy is also expected to receive on lease a Russian nuclear-powered attack submarine (Akula-III), which is likely to join the force by 2025-26. No other nation but Russia has ever offered such a platform to India. The cost of this deal itself is around Rs 22,000 crore.

As reported by this newspaper, the delivery of S-400 strategic air-defence missile system is on time. Negotiations are going on to procure 21 MiG-29 and 12 Sukhoi-30 MKI jets. Further Russia is set to manufacture six lakh AK 203 assault rifles in India at a project cost of Rs 5,124 crore.

Commodore Anil Jai Singh (Retd) sees the Ukraine-Russia conflict affecting the Indian armed forces in two ways. "It will affect the Russian ability to support their equipment with the Indian forces as they will get busy with their own forces, which could lead to delays and cost increase."

The other way this war will impact India negatively is, if Russia, facing economic sanctions, is not able to maintain the momentum of own economy, its industry will have problems, Commodore Singh feels. It's not only about Russia. "Gas turbines of ships come from Ukraine and the Indian mechanised forces get major equipment from there. We have to also look at the standoff along the Line of Actual Control. We may not be fully realising the implications of the conflict on our borders," he says.

### **S-400 among key purchases**

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<https://www.newindianexpress.com/thesundaystandard/2022/apr/17/ukraine-war-may-hit-indias-defence-plans-2442845.html>

THE ECONOMIC TIMES |

Thu, 14 Apr 2022

## **US forces put latest equipment on display for defence minister Rajnath Singh**

US forces showcased their latest equipment, including attack helicopters and missile defence systems, to defence minister Rajnath Singh who is on a visit to the United States Indo-Pacific Command (USINDOPACOM) in Hawaii. The unique visit during which the minister interacted with top US military officials, including commander Admiral John Aquilino, follows the two-



plus-two dialogue between India and the US, where both sides agreed to step up defence cooperation by increasing the complexity of training exercises and undertaking more exchanges of soldiers. The minister visited the headquarters of US Army Pacific and Pacific Air Forces as part of the tour of American combat capabilities. Among the systems showcased were Apache attack helicopters, which are also being used by the Indian Air Force. The Chinook transport helicopter, also used by India, was also displayed during the visit.

Singh was also briefed by the 94th Army Air and Missile Defence Command at Hawaii on their latest equipment. The command operates the Thaad missile defence systems that offer protection against nuclear-capable ballistic missiles. It has also recently deployed the Iron Dome air defence system at the US base in Guam.

The USINDOPACOM and Indian military are involved in wide-ranging engagements, including military exercises, training events and exchanges. The annual Malabar series of exercises between India, US, Japan and Australia is also coordinated by the USINDOPACOM. The upcoming engagements are Indo-Pacific Armies Chiefs Conference and Indo-Pacific Armies Management Seminar that India will be co-hosting. The two sides are also looking at deepening the military cooperation to include Special Forces operations.

<https://economictimes.indiatimes.com/news/defence/us-forces-put-latest-equipment-on-display-for-defence-minister-rajnath-singh/articleshow/90853247.cms?from=mdr>



*Fri, 15 Apr 2022*

## **‘Game changer’: Israel successfully tests new laser defence system**

Israel’s defence ministry on Thursday announced that its new laser missile defence system successfully neutralised drones, rockets, mortars, and anti-tank missiles in a recent test.

According to Defence Minister Benny Gantz, this Israeli-made laser system will complement the country’s air defence system, including the famed Iron Dome, adding that it will be inducted “as soon as possible”, news agency AP reported.

Israel aims to deploy the laser systems—dubbed Iron Beam—around its borders, especially near the Gaza Strip.

According to the Times of Israel newspaper, the test, described as “game changer”, was conducted in March this year at an undisclosed location in southern Israel’s Negev desert.

It was initially planned to deploy the laser system by 2024, but the military wants to be inducted as soon as possible.

Prime Minister Naftali Bennett had announced in February that Israel would deploy the system within the year, the newspaper reported.

The ground-based laser system is being developed with the Rafael weapons manufacturer.

“The successful series of tests proved the uniqueness of the system, intercepting a wide range of threats in a variety of scenarios,” Times of Israel newspaper quoted Rafael Advanced Defense Systems director-general Yoav Har-Even as saying.

“The cooperation between Rafael and the Defence Ministry [research team] has led to a technological breakthrough and the completion of a significant milestone, one that will allow us to reach initial operational capability in a short time,” he added.

According to the ministry, Israel is among the first countries in the world to succeed in using powerful laser technology to develop a working air defence system and to demonstrate interceptions in operational scenarios.

<https://www.wionews.com/world/game-changer-israel-successfully-tests-new-laser-missile-system-471087>

## Science & Technology News



**Press Information Bureau**  
**Government of India**

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*Wed, 13 Apr 2022 2:32PM*

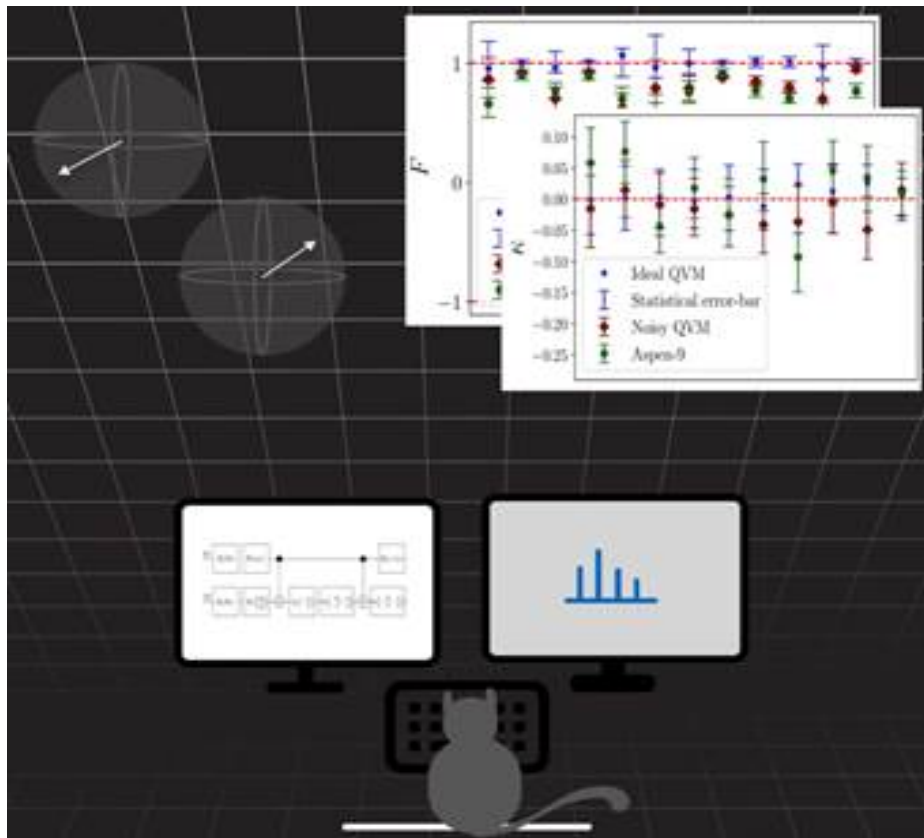
### **Quantum computers may help test fundamental physics providing universal programmable setup for quantum experiments**

Going beyond the usually known use of quantum computers --- performing certain tasks at an exponentially faster rate than classical computers, scientists have for the first time used quantum computers for a novel purpose. They have used the new age computers to directly test the very foundations of the theory on which their working is based.

Quantum mechanics like any physical theory is based on experiments. This means that experiments are used to justify some axioms from which the full theory can be logically deduced. While a large section of the scientific community is invested in building devices towards quantum computing applications, a separate community is invested in precision tests of fundamental aspects of quantum theory itself.

A group of scientists from the Raman Research Institute (RRI), an autonomous institute of the Department of Science and Technology in a collaborative research have used quantum computers to perform some precision tests of the fundamental aspects of the quantum theory called Sorkin and Peres tests. The first is a test of the probabilistic aspect of quantum mechanics which helps calculate the chances of events happening while the second is a test of an aspect of

the superposition principle, which expresses the fact that quantum objects may behave as waves -  
- throwing two stones in a pond gives a wave pattern which is the sum of two waves.



The collaborative work started through a discussion between Professor Urbasi Sinha of RRI Bangalore and conference delegate Prof. Lorenzo Macconne from University of Pavia, Italy during the Quantum Frontiers and Fundamentals (QFF 2020) conference hosted by RRI Bangalore in January 2020. Over the next two years Prof. Sinha, with long standing expertise and contributions in the domain of precision tests of quantum mechanics, along with her post doc explored the possibility of performing experiments on quantum computers with Prof. Macconne, an expert on quantum information theory.

The use of a quantum computer to perform tests of crucial quantum principles in the research published as rapid communication letter in the journal *Physical Review Research* has led to the natural emergence of an entirely new research direction for the physics community that brings together diverse research disciplines under one unifying umbrella.

As quantum computers are scalable quantum systems, this could provide a universal programmable setup for quantum experiments. A quantum circuit, which is like a low-level program for quantum computers, could be a Rosetta stone that allows translation of experiments from one physical system to another.

As a corollary, the scientists have also shown that quantum mechanics is true and the tests can be used as a benchmark to evaluate how well a quantum computer performs. “Our method provides a nice way to create well defined benchmarks for quantum computers so that we know exactly

how error prone they are, by using the very foundations of quantum theory as the benchmarking tool,” said Professor Sinha.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1816336>

