nakshatra

13 August, 2025 Issue 02

Official Newsletter of IOAA 2025

18th IOAA MUMBAI, INDIA - 2025
International Olympiad on Astronomy and Astrophysics

Today's Attraction

IIT Bombay MakerSpace Lab

Image Credit: Wikimedia Commons/ Shishirdasika / CC4

Today, students will visit the Indian Institute of Technology Bombay (IITB), one of India's most prestigious engineering institutes, located in the scenic Powai area of Mumbai. A key part of your experience will be exploring the IITB MakerSpace—a 30,000 sq. ft. hub of creativity and innovation where students bring bold ideas to life. From 3D printers and laser cutters to advanced prototyping labs, the space is buzzing with energy and real-world problem solving. You'll get a behind-the-scenes look at how future engineers, designers, and innovators collaborate to tackle real challenges. You will also attend the following two lectures while at IITB.

10:00 hrs – 11:00 hrs
Prof. Somak Raychaudhury
Vice Chancellor, Ashoka University

11:30 hrs – 12:30 hrs
Prof. Archana Pai
Dept. of Physics, IITB

Weather Forecast

Max:
30°C / 86°F
MIN:
25°C / 77°F
Mumbai

Partly cloudy sky with possibility of moderate rain or thunderstorm
Source: India Meteorological Department

Today's Programme

Students
08:30 hrs - 13:30 hrs
Visit to IIT Bombay MakerSpace Lab

Leaders
09:00 hrs onwards
IBM (Theory)
Venue: Astor Ballroom

Scientists on Life and Learning:
What inspired your journey into astronomy?

Prof. Ajit Kembhavi
Former Director, Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune;
Former Vice President, International Astronomical Union

I was attracted to astronomy quite early in life, when I was about 14 years old. I grew up in Hubli, Karnataka, where there was no scientific activity as such, but there was an excellent municipal library. There, I found books on astronomy, physics, and mathematics. I got attracted to these books and spent quite some time reading them without really understanding much. But gradually, the information was seeping into me. In 1965, I read in the newspaper Deccan Herald that a young scientist called Jayant Narlikar had worked on a new theory (Jayant Narlikar was a renowned Indian astrophysicist, best known for his work in cosmology and for developing the Hoyle-Narlikar theory of gravity). The next day, our science teacher asked the class a question about the news, and I was able to rattle off everything that I had read, which was a turning point for me. My teachers encouraged and supported me, even though they could not help me directly. That was also true of my teachers in the early college years in Hubli. Then I decided to go to Bombay for further studies, and quite soon after I got there and joined Ruia College, I met other interested students and started going to TIFR for group discussions and projects. Eventually, I joined TIFR for a Ph.D. and worked with Jayant Narlikar, whose work had inspired me several years earlier. Then, over the years, I grew into an astronomer.

Feature

LIGO- India

Image Credit: AI Generated

The Laser Interferometer Gravitational-Wave Observatory (LIGO) - India is a planned advanced gravitational wave observatory to be built in India by 2030 at an estimated cost of ₹2,600 crore. This project is a collaboration between India's Department of Atomic Energy, Department of Science & Technology, and the U.S. National Science Foundation's LIGO Laboratory at Caltech and MIT. Featuring a 4-km L-shaped interferometer that matches American detectors, it will integrate into a global network with sites in the U.S.A., Italy, and Japan to improve the localisation of cosmic events, such as neutron-star or black-hole mergers. Key Indian institutes involved include the Raja Ramanna Centre for Advanced Technology (RRCAT), the Institute for Plasma Research (IPR), and the Inter-University Centre for Astronomy & Astrophysics (IUCAA). Beyond astronomy, LIGO-India will develop technologies in precision measurement, vacuum systems, optics, and lasers.

Spotlight


India
Contestants
Leaders
Observers
Visitor


Leaders


Contestant


Contestants
Leaders


Olympiad
Leaders


Leaders


Armenia
Leaders


Türkiye
Contestants
Leaders

Chess and Its Indian Roots!

A glimpse of Chaturanga: The ancient precursor to Chess

We all love playing chess. Ever wondered where the elephant, horse, and other pieces came from? The game has a rich history in Indian culture, dating back to the Gupta Empire (320–550 AD), where it was known as *Chaturanga*. This ancient Indian board game is considered one of the precursors to modern chess. The word *Chaturanga* comes from Sanskrit, with *chatur* meaning 'four' and *anga* meaning 'branches' or 'limbs'. It featured four key divisions of the army at the time: infantry, cavalry, elephants, and chariots. As chess spread to other parts of the world, it became part of cultural exchanges, influencing the development of the game in Persia, Arabia, and Europe.

India has produced some of the world's most talented chess players in recent times—Viswanathan Anand, a five-time world chess champion, and D. Gukesh, a prodigy and the youngest ever as well as the current world champion. Next time you make a chess move, remember the rich history behind the game—one that has transcended geographical and cultural boundaries.

Image Credit: Wikimedia Commons/ Krishnakumarvairassery / CC4

In Their Own Words

This is my first time in India! Mumbai is a really big city compared to European cities where I'm from. The people, culture, and food are very different. I can see a lot more people and movement in the streets—it's really interesting to look around. I'm a football fan, and I brought a Portugal FC T-shirt with me from home to India.

Miguel Valente Silva Fernandes Cravo
(Contestant, Portugal)

I feel that our culture is very similar to India's. I didn't specifically pack anything I wouldn't find here, because our cultures are so similar, I thought I could find everything here.

Farhan Sajid
(Contestant, Bangladesh)

We just find the city of Mumbai to be so shiny and opulent! We love the lights and the buzz of the city. It has such a beautiful night sky. There is always a lot of captivating noise and movement.

Sana Huang and Wenyu Ruan
(Contestants, Canada)

My love for astronomy started when I was young and my mother gifted me a book on it. I felt curious about the skies.

Elaiah Asperin
(Contestant, Philippines)

My father inspired me to study Astronomy. I had a great high school teacher who encouraged me towards Astronomy.

Dorottya Elekes
(Contestant, Hungary)

This is my first time in India. I'm excited about the excursion to the GMRT because it's fascinating to see the largest and most sensitive radio telescope array in the world at low frequencies

Penelope Hale
(Leader, Australia)

My interest in astronomy goes back about 50 years. I was intrigued by the night sky and came across some books that made astronomy my vocation for life. After that, I studied physics and astrophysics, and mentored a lot of students over 30–40 years of my career. So you could say it's my life's passion.

Jamal Mimouni
(Leader, Algeria)

India has a really different culture and delicious food. I'd love to absorb the culture and learn more about it. I'd also love to connect with other students and make new friends.

Bohdan Ohorodnyk
(Contestant, Ukraine)

Feature

Jocelyn Bell Burnell

(15 July, 1943)

Image Credit: Wikimedia Commons / Roger W Haworth - Flickr/ CC2

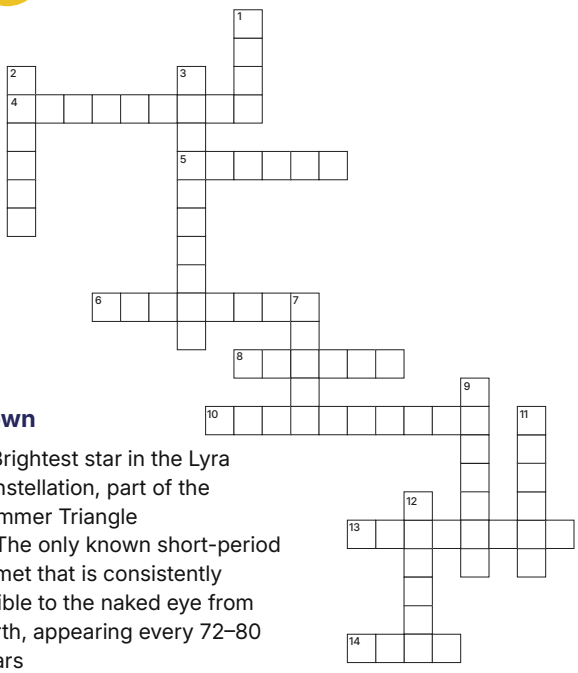
Imagine sifting through miles of squiggly radio signals, looking for patterns, and spotting a cosmic heartbeat. That's exactly what Jocelyn Bell Burnell did!

Jocelyn as a child loved the stars—her father, an architect, had helped design a planetarium at the Armagh Observatory! As a doctoral student, Jocelyn successfully made a radio telescope with her colleagues. In 1967, she noticed a tiny "pulse" in her data that repeated every 1.33 seconds. It wasn't a noise. It wasn't aliens (though she jokingly called it "LGM –Little Green Men"). It was the sign of first "pulsar" ever discovered, a super-dense, spinning neutron star sending out regular radio waves, like a lighthouse in space!

Pulsars became cosmic laboratories, helping scientists study black holes, gravitational waves, and even test Einstein's theories. Jocelyn further went beyond radiowaves, exploring the universe with gamma rays, X-rays, and infrared light; and helped astronomers build new instruments.

She cared deeply about education, and also fought for womens' and minorities' place in science. When she won the $3 million Breakthrough Prize in 2018, she donated it all to help underrepresented students in Physics! Jocelyn teaches us that perseverance matters, and that sharing opportunities is as important as making discoveries!

Cross Word Puzzle



Down

1. Brightest star in the Lyra constellation, part of the Summer Triangle
2. The only known short-period comet that is consistently visible to the naked eye from Earth, appearing every 72–80 years
3. It is the closest radio galaxy to Earth
7. ___ Debris: Defunct satellites and fragments orbiting Earth, posing a threat to spacecraft
9. The smallest planet and closest to the Sun
11. The brightest star in the night sky, part of the Canis Major constellation
12. One of Jupiter's icy moons, believed to have a subsurface ocean

Across

4. Our closest spiral galaxy neighbour, on a collision course with the Milky Way
5. Neptune's largest moon orbits in the opposite direction of its planet's rotation

Across (contd..)

6. Cooler, darker areas on the solar surface that are associated with magnetic activity
8. This planet orbits on its side with an extreme axial tilt
10. A red supergiant in Orion, known for its variability and possible future supernova
13. A zodiac constellation often depicted as a water-bearer
14. __ Nebula: A supernova remnant in Taurus, observed by Chinese astronomers in 1054 CE

Hot Takes for a Hotter Earth

When the last tree is cut, the last fish is caught, and the last river is polluted, we will realise we cannot eat money.

Cryptic

Starting this issue, cryptic clues appear till Issue 8. Keep a note of them to unlock a password in Issue 9.

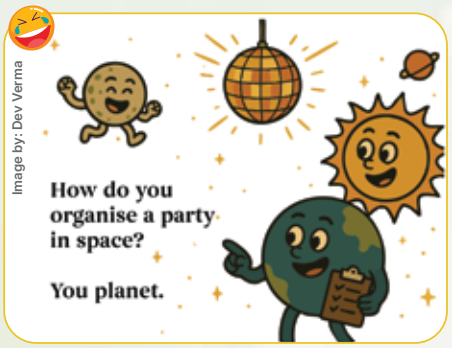


Image by: Dev Verma

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