AstroBaqir

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Monthly magazine

"I'm sure the universe is full of intelligent life. It's just been too intelligent to come here."

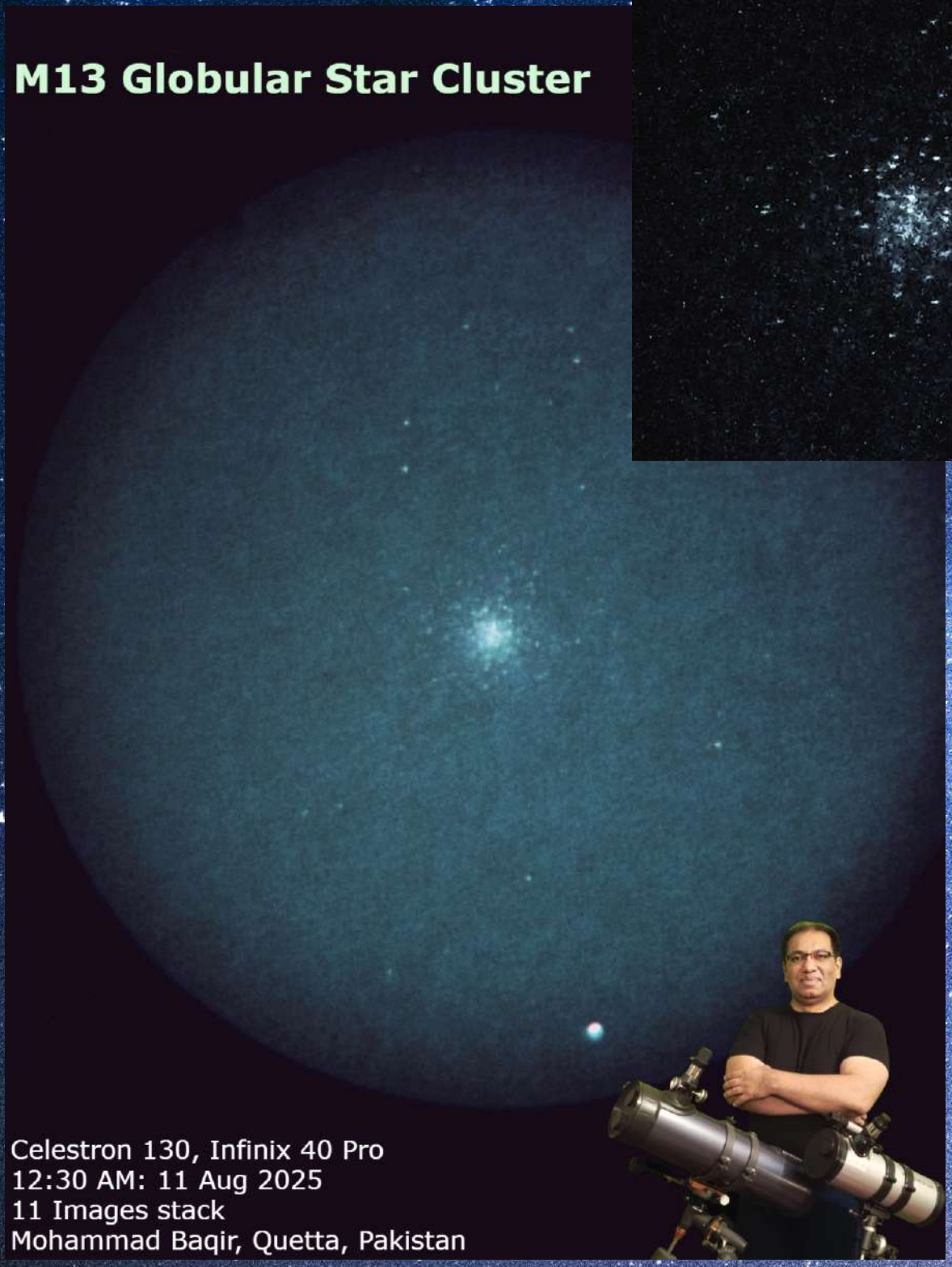
- Arthur C. Clarke, Science Fiction Writer

Space Sciences
سپیس سائنسز

Magazine composition by
Mohammad Baqir

M 13 Globular Star cluster

M13, also known as the Great Globular Cluster in Hercules, is a magnificent globular star cluster, easily visible with binoculars or a small telescope under dark skies. It's located about 25,100 light-years away and contains an estimated 100,000 to 300,000 stars packed into a sphere approximately 150 light-years in diameter.



Asteroid Pallas

Asteroid Pallas is the second largest asteroid in our solar system and is known for its unusual orbit and spectral characteristics. It is a B-type asteroid, meaning it has a dark surface composition similar to carbonaceous chondrites. Pallas is also associated with a family of asteroid fragments, potentially created by a massive impact billions of years ago.

Discovery: Pallas was discovered by Heinrich Olbers on March 28, 1802.

Size and Shape: It's roughly 300 miles in diameter and has a somewhat irregular shape.

Composition: Pallas is primarily composed of silicates with little iron and water.

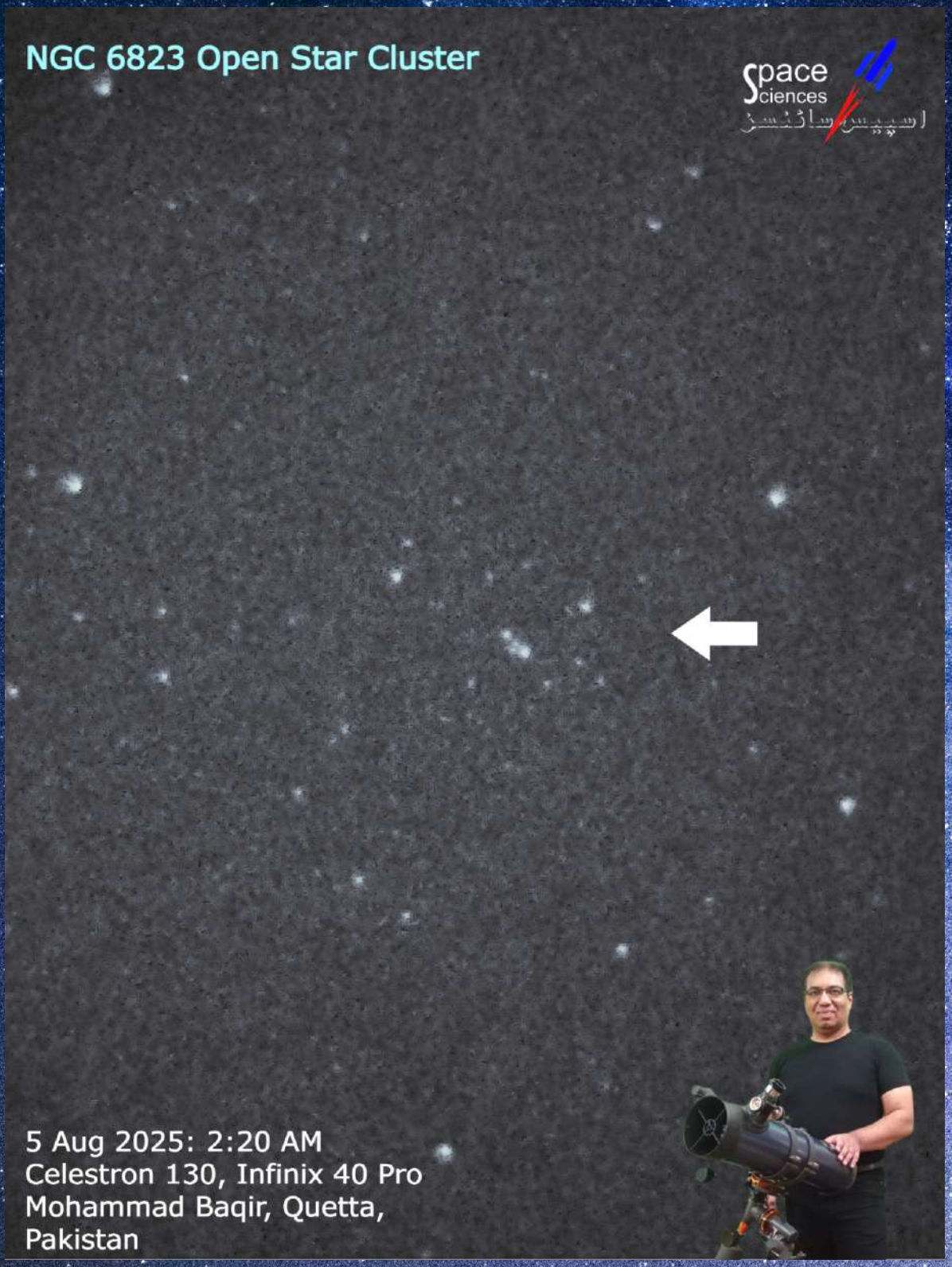
Pallas Family: It's the namesake of the Pallas collisional family, a group of asteroids believed to have originated from Pallas after a large impact. Unusual Orbit: Pallas has a highly inclined and eccentric orbit, making it stand out from other large asteroids.

Possible Origin of the Geminids: Some theories suggest that the Geminid meteor shower, an annual event, may be linked to fragments of Pallas or its family members, possibly due to a large impact.

Potential for Future Missions: NASA has proposed missions to explore Pallas, potentially as a future destination for a SmallSat mission.

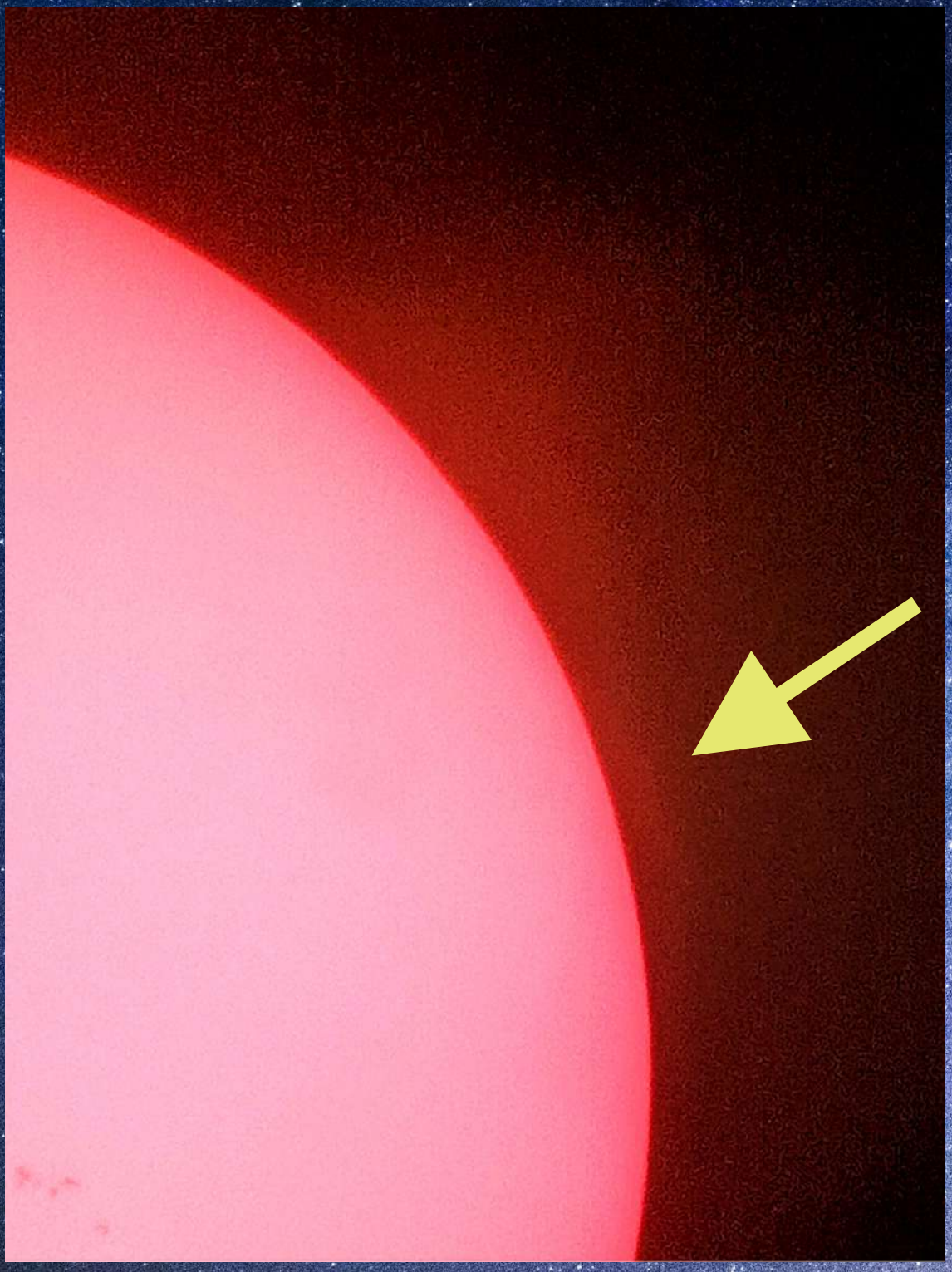
Open Star Cluster NGC 6823

NGC 6823 is an open star cluster located in the constellation Vulpecula, approximately 6,000 light-years away from Earth. It's embedded within the larger emission nebula NGC 6820. The cluster is estimated to be around 2 million years old and spans about 50 light-years in diameter.



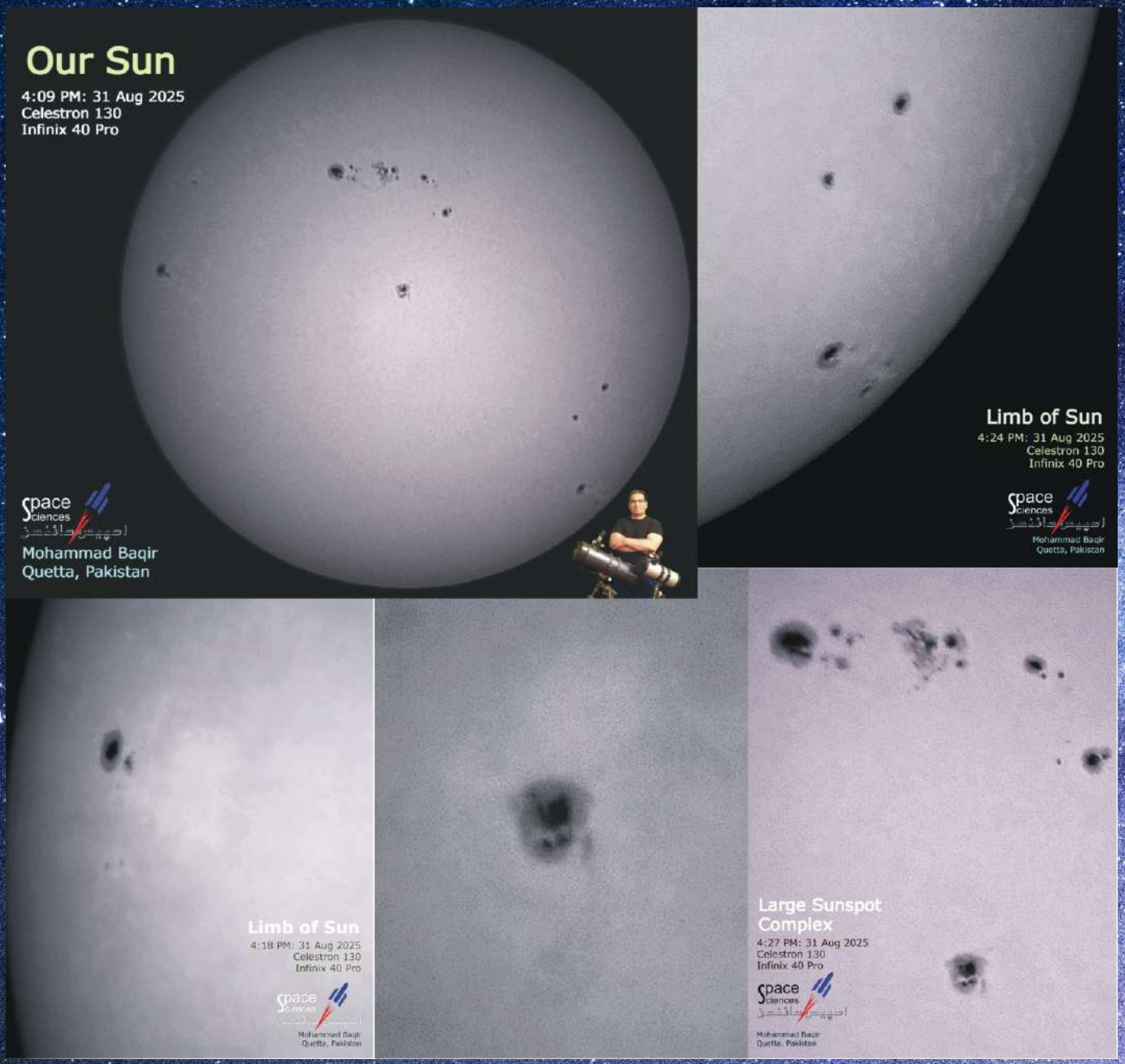
Solar arc prominence (observed by me for the first time)

A solar prominence, also known as a filament when viewed against the Sun's disk, is a large, bright, and often looping feature extending from the Sun's surface. These features are composed of ionized gas (plasma) that is caught in magnetic loops and extend outwards from the Sun's surface into the corona. Prominences



Sunspots

Sunspots are temporary, darker, and cooler areas on the Sun's surface (photosphere) that are caused by intense magnetic activity inhibiting convection. These concentrated magnetic fields disrupt the normal flow of heat from the Sun's interior, leading to lower surface temperatures and their characteristic dark appearance. Sunspots usually appear in pairs of opposite magnetic polarity and are a key indicator of the Sun's ~11-year solar cycle



Dwaf Planet “Ceres”

Dwarf planet Ceres is the largest object in the asteroid belt, located between Mars and Jupiter, and the only dwarf planet in the inner solar system. Discovered in 1801 by Giuseppe Piazzi, it's the first asteroid to be found and is named after the Roman goddess of agriculture. Ceres has a diameter of about 946 km, a differentiated internal structure of ice, rock, and possibly a subsurface ocean, and features bright spots on its surface.

Saturn planet's equatorial bulge

Saturn's equatorial bulge is its shape as an oblate spheroid, caused by its rapid rotation and low density, making its equatorial diameter about 10.7% larger than its polar diameter. This bulge, the most significant among the planets, arises from the centrifugal force generated by its fast spin. As Saturn spins, material is flung outwards at the equator, creating the planet's distinctive flattened, "squashed" appearance.

Saturn's equatorial bulge

Calculations by
Syed Mohammad Baqir

Complete Circle 24.971 mm diameter
Ellipse 24.971 mm x 29 mm

Ratio of equatorial to polar diameter according to my calculations is 1.161347 while actual value is 1.108592. My calculations to find ratio between diameter values contains 4.5% error. This error is small but even this can be removed using larger telescope and better imaging techniques.

Saturn planet's four largest satellites

Here are the four largest moons of Saturn:

1. Titan
Diameter: 5,150 kilometers (3,200 miles)
Key Features: The largest of Saturn's moons and the only moon in the solar system known to have a dense atmosphere. It also has liquids on its surface, including clouds, rain, rivers, lakes, and seas of liquid methane and ethane.

2. Rhea
Diameter: 1,500 kilometers (950 miles)
Key Features: A heavily cratered moon composed of a mix of ice and rock.

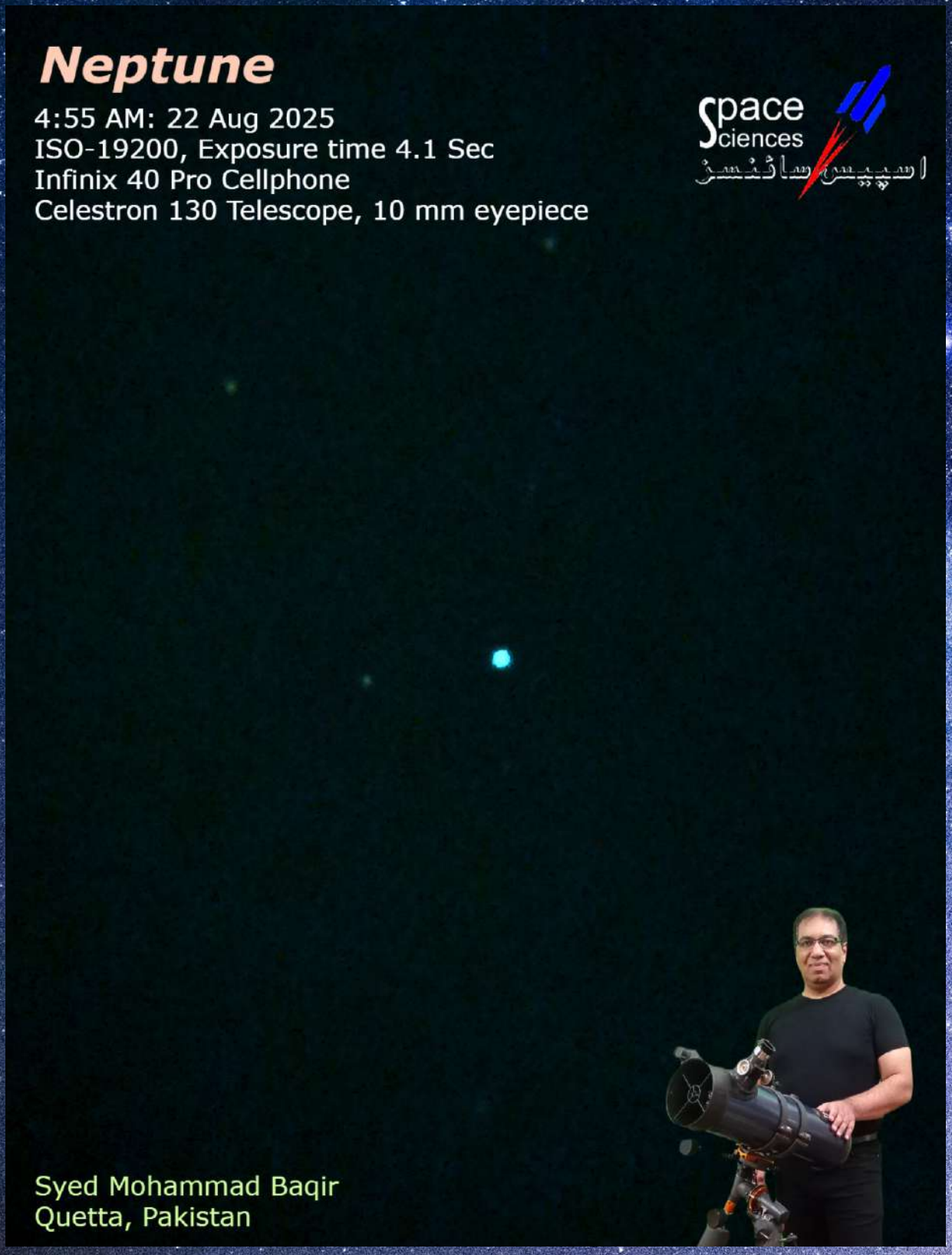
3. Iapetus
Diameter: 1,470 kilometers (914 miles)
Key Features: This moon is known for its two distinct hemispheres, one much brighter than the other, and is also heavily cratered.

4. Dione
Diameter: 1,120 kilometers (698 miles)
Key Features: A heavily cratered moon with a dense core.

Saturn planet

Neptune

Neptune is the eighth and farthest planet from the Sun in our solar system, known as an "ice giant" for its composition of water, ammonia, and methane, which gives it a distinctive blue color. It is famous for its powerful storms and supersonic winds, and it has several moons, including the largest, Triton. Neptune was the first planet discovered through mathematical prediction rather than direct observation, a triumph of mathematics in astronomy



Triton (Neptune's largest satellite)

Triton is the largest moon of Neptune, with a diameter of about 2,700 kilometers (1,680 miles). It is named after Triton, the son of the Greek god Poseidon, who is analogous to the Roman god Neptune. Triton was discovered in 1846 by British astronomer William Lassell.

Concluded lecture series on creation of universe

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