



**ETHIOPIAN
SPACE
SCIENCE
SOCIETY**

AfAS
African Astronomical Society

From Grassroots to National Infrastructure: The ESSS Model for Space Sector Development

Kirubel M. Alemu
Ethiopian Space Science Society
21 March 2026,
Kasane, Botswana



Community

We are a community of scientists, educators, students, and enthusiasts united by a shared belief that space science can transform societies inspiring innovation, fostering national pride, and building the skills essential for Ethiopia's future.



Leadership

The Ethiopian Space Science Society (ESSS) is a pioneering national non-profit and non-governmental organization established in 2004, with 47 founding members.



H.E Mr. Demeke Mekonnen
Patron of ESSS



H.E Mr. Tefera Waluwa
Founder and
Former Patron of ESSS

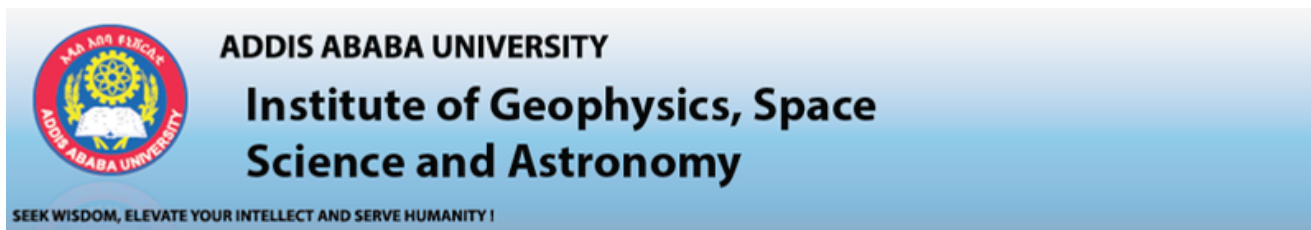


Ms. Mesenbet Shinkute
Board Chair

History of Astronomy

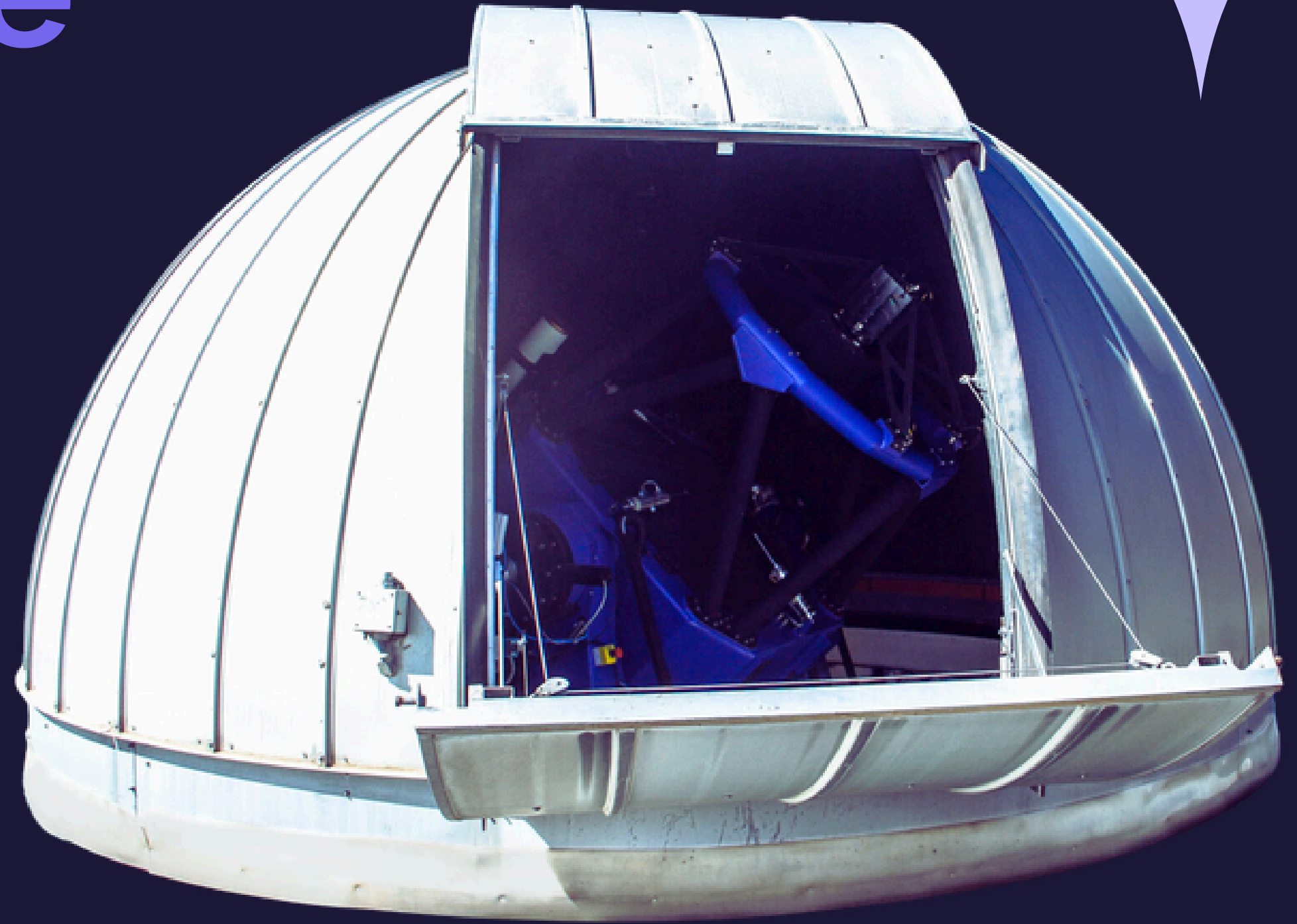
History of Modern Astronomy in Ethiopia

- Foundation of the Geophysical Observatory at Addis Ababa University: Currently known as the Institute of Geophysics, Space Science, and Astronomy (IGSSA) in 1957.
- IGSSA's Role: A national seismological, geomagnetic, and geodetic observatory with primary duties of conducting permanent monitoring of the Earth's systems.



Infrastructure Development

Leveraging a resource investment of nearly \$400\$ million, the ESSS successfully built and established the Entoto Observatory and Research Center (EORC) in 2012 as a non-profit. This major asset was subsequently transferred to the Ministry of Science and Technology, providing the foundation for the creation of ESSTI and the later evolution into SSGI.



Reach & Impact

Over the past two decades, ESSS has evolved from a small group of passionate advocates into a nationally recognized scientific society that has shaped the direction of Ethiopia's space journey.

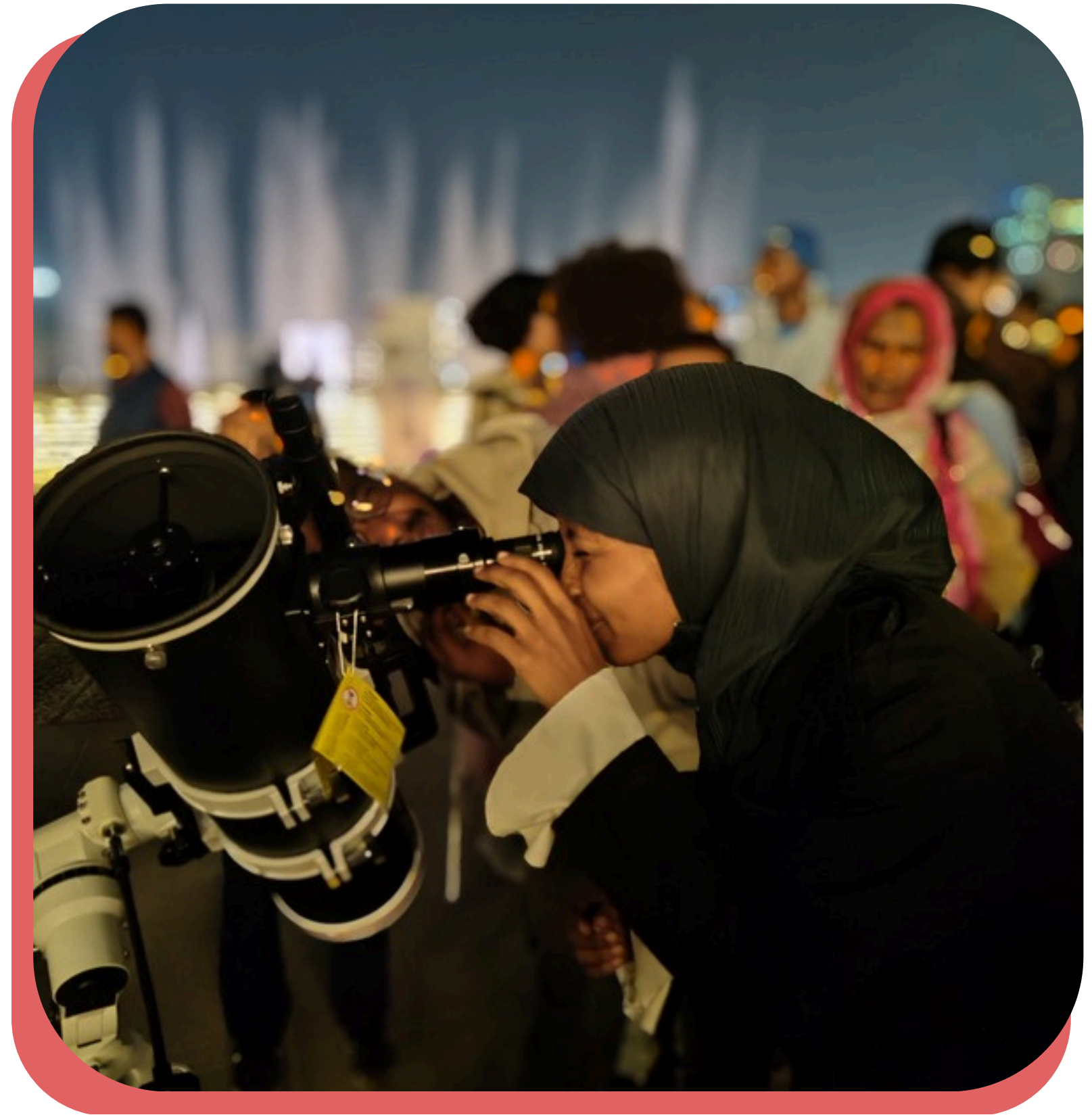


20,000+

Members

Across **ETHIOPIA**

Over the past two decades, ESSS has evolved from a small group of passionate advocates into a nationally recognized scientific society that has shaped the direction of Ethiopia's space journey.



31

Branch Associations all over ETHIOPIA

Our vision is amplified by a growing, cross-sector network of over 31 branch associations assuring national reach and accessibility for all.



68+

Intitutional Members from Various Sectors

Our vision is amplified by a growing, cross-sector network of over 68 Institutional Members from various sectors, confirming the wide national relevance of our work.



A Framework for National Capacity Building

- **Education:** Expanding access to learning from grassroots to professional levels.
- **Outreach:** Delivering nationwide programs and citizen science initiatives to the public.
- **Research Infrastructure Development:** Developing physical facilities and strengthening technical capabilities in partnership with universities.
- **Advocacy:** Supporting policymakers to integrate space science into national development agendas.



Securing Orbital Slot

As a key advocate, ESSS's foundational work and relentless lobbying were instrumental in helping Ethiopia gain its sovereign orbital slot. This critical achievement secured the nation's right to space and paved the way for all subsequent national satellite programs.



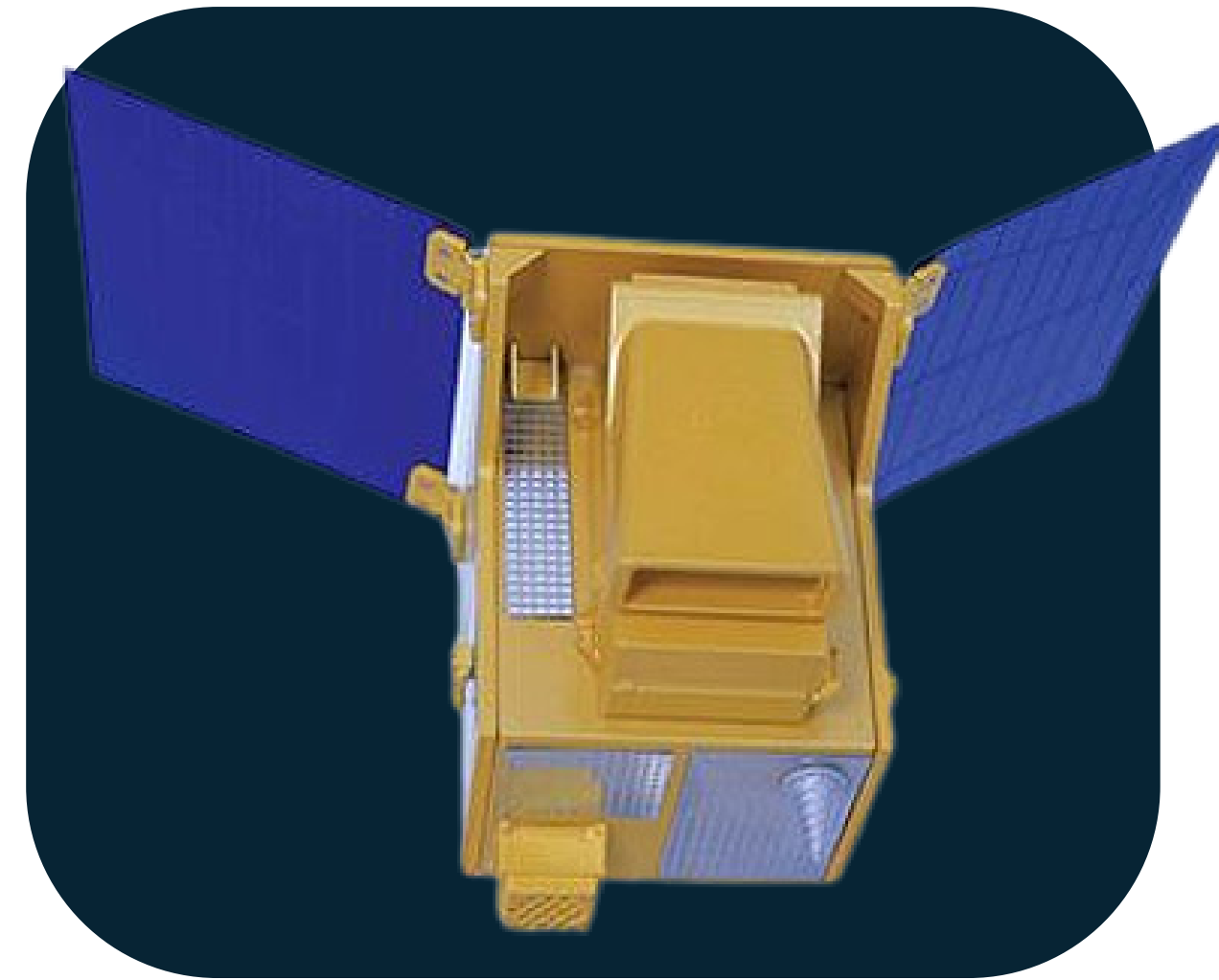
National Space Policy in 2018

Drafted by the Council of Ministers and formally ratified in 2018, the National Space Policy delivered the country's first guiding mandate for all space activities. This landmark policy provided the strategic framework now implemented by the SSGI, focusing on leveraging space technologies to drive national development, address socio-economic challenges, and safeguard national security.



Launching of Ethiopia's 1st Satellite

The foundational groundwork laid by our Society—including the establishment of EORC and institutional advocacy—culminated in the nation's greatest achievement: the successful launch of Ethiopia's first satellite, ETRSS-1, by ESSTI in December 2019. This moment validated our long-term vision and formally launched Ethiopia into the space age.



A Seat at the Global Table

In 2012, our efforts culminated in Ethiopia officially joining the International Astronomical Union (IAU). This made Ethiopia only the 6th African nation to be admitted at the time (following South Africa, Egypt, Algeria, Morocco, and Nigeria) and integrated our country into the 73-member global astronomy community.

IAU

Securing East Africa's Astronomical Hub

Our foundational work and persistent advocacy led to a major continental milestone: securing Ethiopia as the host of the IAU Office of Astronomy for Development (OAD) East African Regional Node in 2014—the first regional node to be established on the African continent.



Flagship Projects and Programmes

Our strategic vision is brought to life through a portfolio of impactful Flagship Projects and Programmes. These key undertakings drive decentralized scientific development, maximize community engagement, and represent the highest level of collaboration between the ESSS, academic institutions, and regional governments.



Astrobus Ethiopia

A dynamic outreach initiative that travels across Ethiopia, bringing science, art, and innovation directly to communities. The AstroBus transforms learning into an interactive experience, inspiring curiosity and creativity among students and the public.



Summer Space Training

A nationwide series of hands-on training sessions designed for students. The program offers practical learning in Astronomy, Space Engineering, and Aerospace Engineering, cultivating knowledge and passion for space science across Ethiopia.



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Space Public Lecture Series

An engaging platform featuring talks by experts from various space-related fields. The series bridges the gap between professionals and the public, providing opportunities for open dialogue, knowledge exchange, and inspiration through science communication.

**SPACE
PUBLIC
LECTURE
SERIES**



Citizen Science Project

An open research initiative inviting students, amateur astronomers, and the public to participate in global projects like the Asteroid Search Campaign and Zooniverse. It promotes collaboration and active participation in space research, strengthening public engagement in science and discovery.



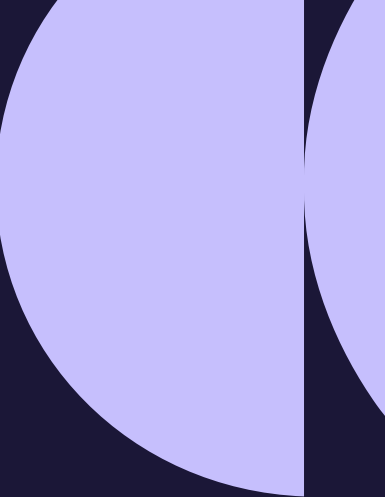
STS Session with LCO



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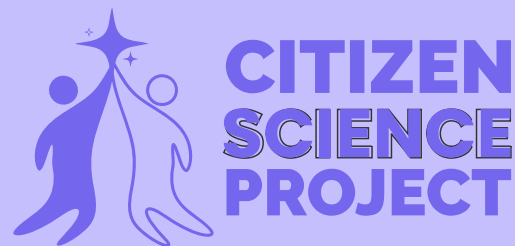


UNIVERSITY OF CALIFORNIA
SANTA CRUZ



Citizen Science Project

Discovery of the Asteroid 2023 SY203 SY20
In collaboration with the IASC and the PACS-eLab
Observation by Pan-STARRS Observatory



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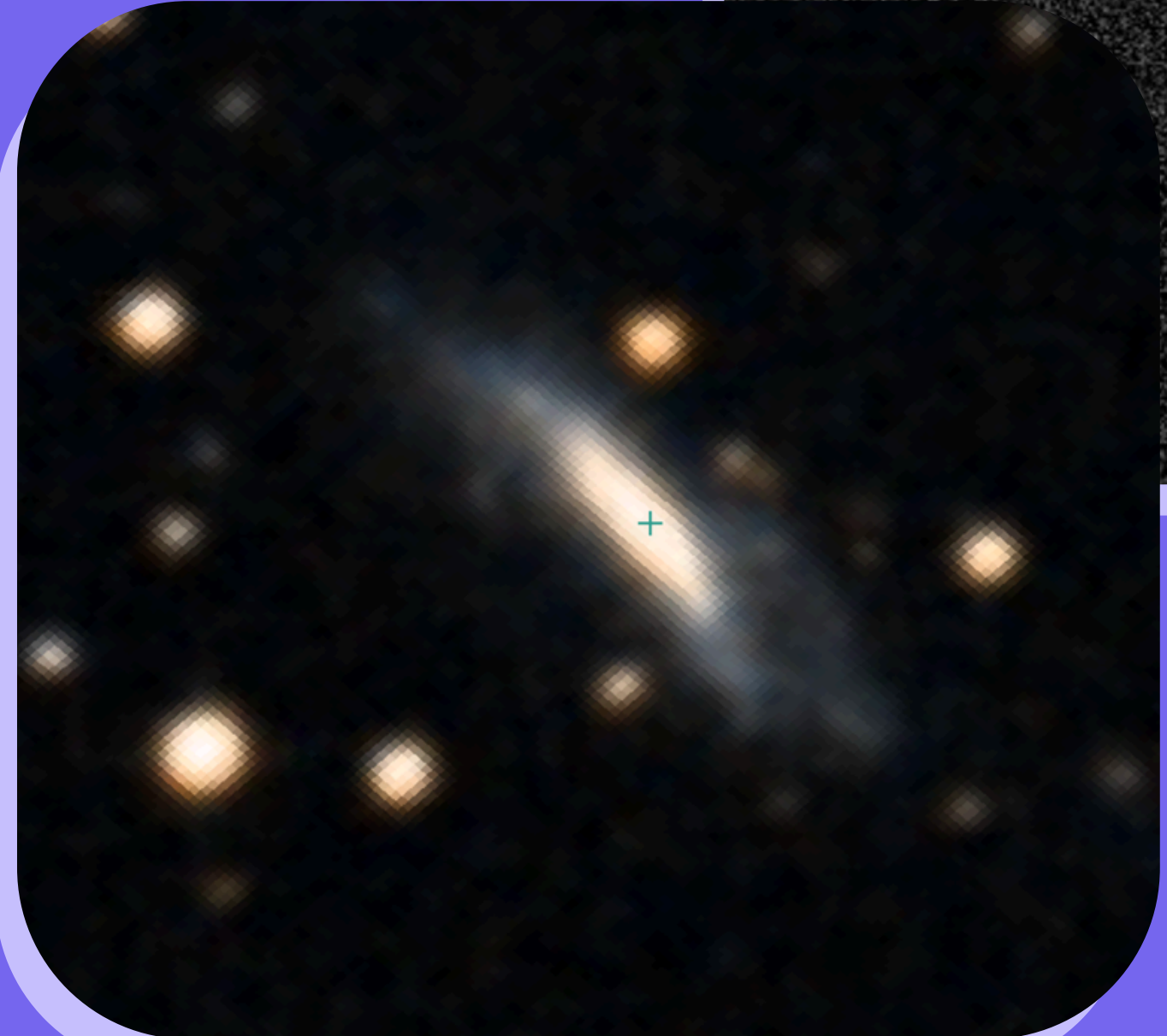
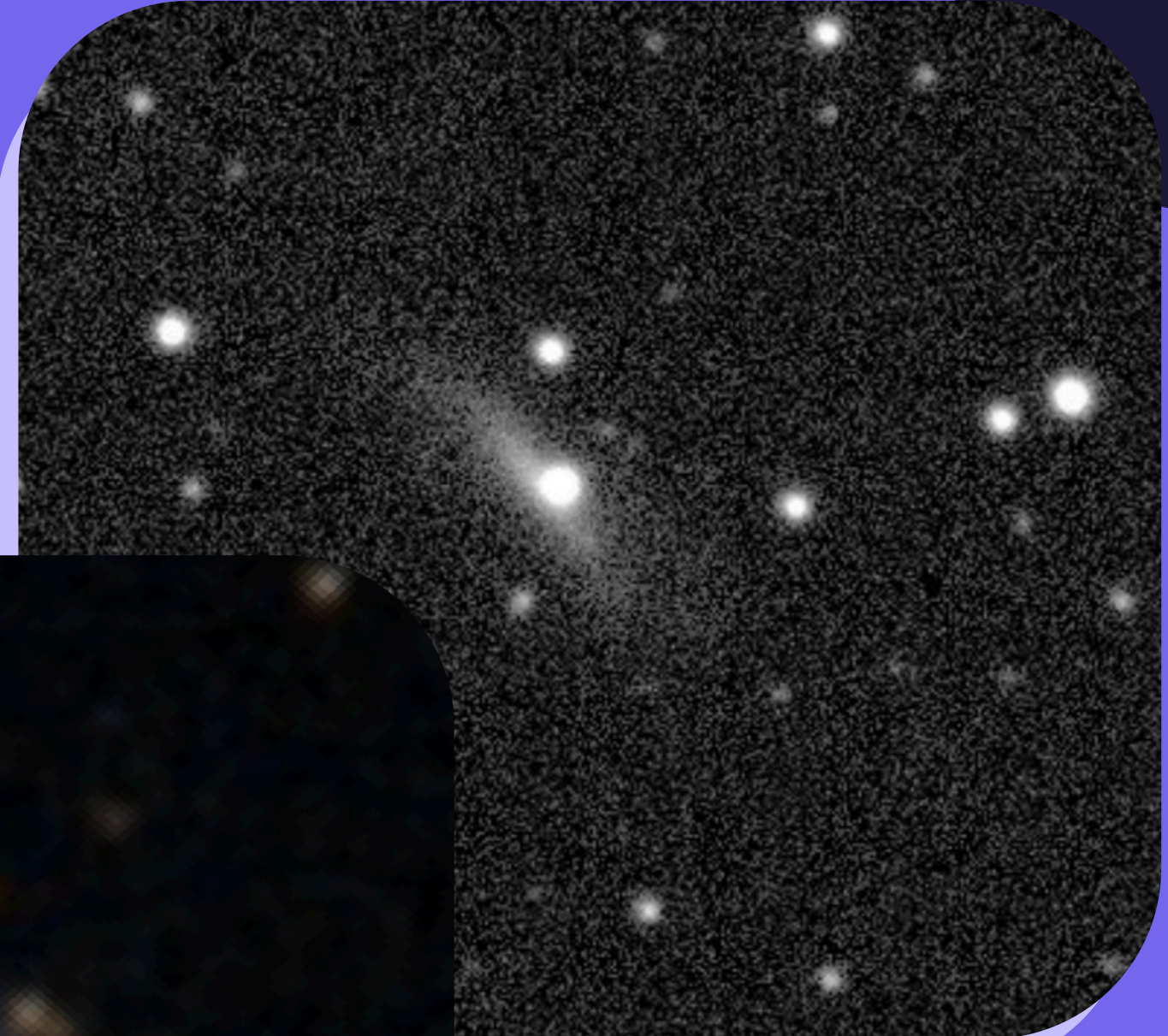
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ግንኙን አስተረጎፊ 2023 SY20

@officialsss

Citizen Science Project

Observation of the Supernova SN 2025qpk, on 25/07/2025. Using LCO 1m Telescope



The Ethiopian Sky

A community-driven program dedicated to supporting and expanding Ethiopia's amateur astronomy network. It focuses on observational astronomy, stargazing, and astrophotography, offering enthusiasts opportunities to explore the cosmos and develop their skills.



The Ethiopian Sky



The Ethiopian Sky

Observations made by ESSS



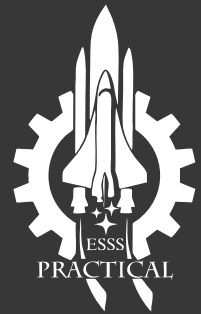
The Ethiopian Sky



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Space Practcals

A flagship hands-on initiative that promotes project-based learning in space science and engineering. The program bridges theory and application through accessible activities such as water and sugar rocketry, CubeSat prototyping, and robotic rover design. By engaging students, young professionals, and enthusiasts nationwide, ESSS Practical fosters technical skills, innovation, and collaboration, contributing to the development of Ethiopia's growing space science sector.



**SPACE
PRACTICALS**



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Space Internship Programme

A professional development program that places students and young graduates in research and technical environments. The internship provides mentorship, skill-building, and exposure to space-related disciplines, preparing participants for future careers in science and technology.



LRAOP Project

Our commitment to decentralizing scientific development is realized through major undertakings like the Lalibela Research and Astronomical Observatory. This flagship project is built in consortium with 5 public universities in northern Ethiopia and the Amhara Regional State, making it the largest space science project managed by the ESSS.

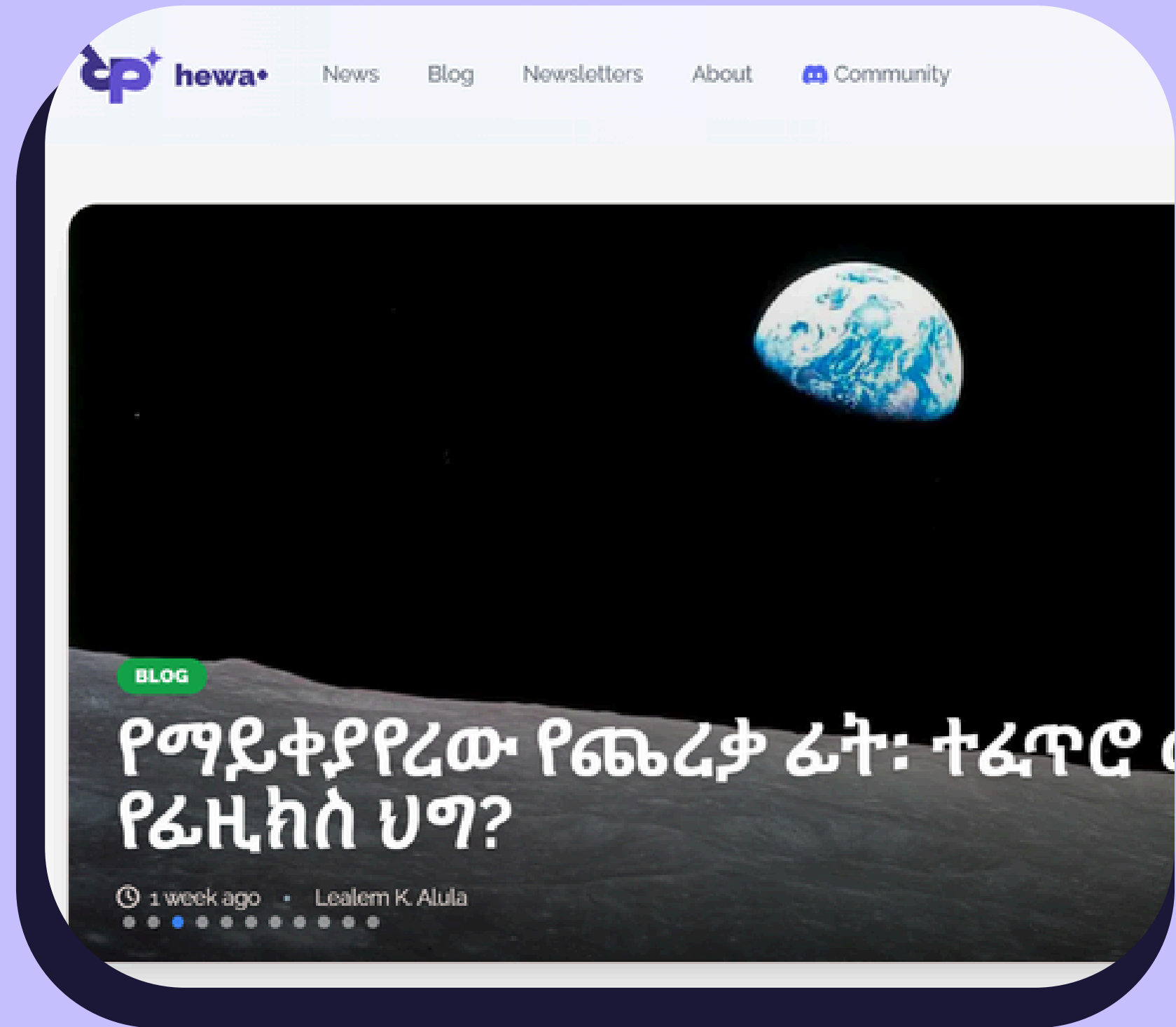


Hewa+

Hewa+ is the exclusive digital hub for ESSS members. It is a dedicated platform designed to connect space enthusiasts, provide access to specialized research resources, and foster a deeper community around space science in Ethiopia.



<https://hewa.ethiosss.org/>



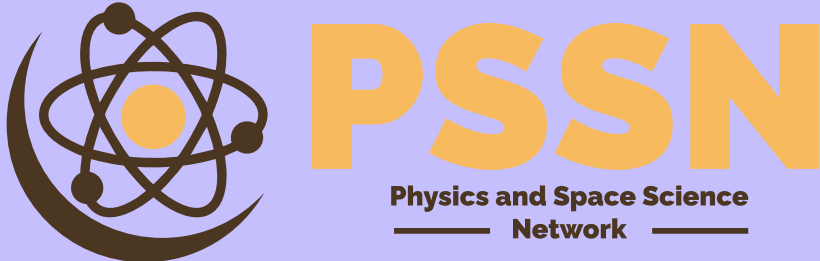
Felek

We are democratizing space science education with the launch of Felek, a free online learning platform. Serving as a crucial extension of our successful summer training program, Felek ensures that high-quality space education is accessible to everyone, regardless of location or background.



The Space Professionals Network

We are democratizing space science education with the launch of Felek, a free online learning platform. Serving as a crucial extension of our successful summer training program, Felek ensures that high-quality space education is accessible to everyone, regardless of location or background.



Challenges Along the Way

- **Competing National Priorities:** Securing consistent government focus and policy support amidst broader national challenges.
- **Resource Accessibility:** Overcoming the scarcity of essential observational materials, telescopes, and technical instruments.
- **The Higher Education Drop-off:** Addressing the critical loss of student interest during the transition to university, which threatens the survival of core physics and astronomy departments.
- **Perception vs. Necessity:** Shifting the narrative to prove that astronomy is not a scientific novelty, but a crucial driver for community and economic development.



Strategic Direction for Sustainable Capacity

- **Empowering the Volunteer Network:** Cultivating a highly engaged volunteer workforce to execute our flagship programs and drive nationwide grassroots outreach.
- **Strengthening the Academic Pipeline:** Deepening high school engagement to build a resilient talent pool that sustains and grows university physics and astronomy programs.
- **Elevating Researcher Voices:** Hosting structured policy dialogues to ensure the government recognizes space science as a fundamental national necessity.
- **Public-Professional Interaction:** Connecting researchers directly with communities to demystify their work and explain its real-world scientific impact.
- **Professional Mentorship Networks:** Establishing platforms for experienced astronomers and engineers to guide students, share research opportunities, and foster the next generation of scientific leaders.
- **Effective Science Communication:** Building a robust media presence to represent Ethiopian astronomy accurately and share research advancements widely.



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Thank You!

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Connect