Astronomical and Astrophysical Transactions (*AApTr*), 2022, Vol. 33, Issue 3, pp. 187–190,
ISSN 1055-6796, Photocopying permitted by license only, ©Cambridge Scientific Publishers

Astronomy in Iran (an update, 2021)*

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Received 14 December, 2022

What I present here today to this audience is an update of what I have done in 2006 in the IAU Special Session for Astronomy in the Developing World. In spite of the renowned pivotal role in the development of astronomy on the world scale during the 9^{th} to 15^{th} centuries, Iran's rekindled interest in modern astronomy is a recent happening. Since the late 18^{th} and early 19^{th} centuries amateurs and philanthropists were promoting the modern astronomy by their writings and translations of astronomical literature. Small telescopes were available for watching the sky, if not for any scientifically planned project.

The University of Tehran (UT) was established in 1935. Celestial mechanics was taught in its Mathematics Department, solar physics and special theory of relativity were the regular courses in the Physics Department. I myself learned the basics of the special theory of relativity in our classical mechanics course and the rudiments of the Riemannian geometry and curved spacetimes in my math physics courses.

A breakthrough in the introduction of space physics to the Iranian Society came with the creation of the Geophysics Institute (GI) of UT in the 1950s. A modest solar observatory equipped with a small solar telescope and appropriate H, IR, and UV filters was established. The late Dr. Alinush Terian, a gracious Iranian Armenian lady, was in charge of the operation of the observatory. In the late 1950s with the sponsorship of Prof. H. Keshi Afshar, Director of GI, Iran became a member of the International Astronomical Union (IAU). In the early years, Dr. Terian was representing Iran in the IAU. In honor of Dr. Terian, the newly formed Women Branch of the Astronomical Society of Iran has announced the 9^{th} November, Terian's birthday, as the Day of Women Astronomy of Iran.

Serious attempts to introduce astronomy into university curricula and to develop it into a respectable and worthwhile field of research began in the mid-1960s. The pioneer was the Physics Department of Shiraz University which should be credited for the first few dozen of astronomy- and astrophysics-related research papers in international journals, for training the first half a dozen of professional astronomers and for

*Dedicated to the International Year of Basic Sciences for Sustainable Development.

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creating the Biruni Observatory (BO). Here I take the opportunity to acknowledge the valuable advice of Bob Koch and Ed Guinan of the University of Pennsylvania in the course of the establishment of this observatory. The Observatory celebrated its 40^{th} anniversary in 2017. It is renovated under the directorship of Dr. Moin Musleh. Presently, BO is the only operating astronomical observatory in the country.

At present the astronomical community of Iran including cosmologists consists of about 550 professionals, roughly half university faculty members and half MSc and PhD students. According to the Web of Science, the scientific contribution of its members in 2021 exceeded 4500 papers in reputable international journals. This is slightly lower than one percent of the scientific contribution of Iran, ∼48000 in 2020.

Among the existing observational facilities, Biruni Observatory with its 51-cm Cassegrain, OCD cameras, photometers and other smaller educational telescopes, is by far the most active place. A number of smaller observing facilities exist in Tabriz, Meshed, Isfahan, Zanjan, Tehran, Babol and other places. In addition to the optical observatory, the first cosmic ray observatory was established by Jalal Samimi in the 80s at the Sharif University of Technology (SUT). The observatory is working based on plastic scintillators and Cherenkov radiation. More than 10 Ph.D. students finished their thesis working with these instruments. Recently the University of Semnan also developed its own astroparticle detectors.

The cosmology group of SUT is an internationally recognized research team. It was initiated by R. Mansouri and followed by his students; the group works mainly on structure formation and early universe. Also, since 2008, S. Rahvar of SUT and his students are collaborating with an international observational project on exoplanet detection.

In the past 20 years, the astronomers of Iran have staged an intensive campaign to have an Iran National Observatory (INO) of their own. The initial planning was for a 2-m class telescope with CCD-based instrumentation. Thanks to Reza Mansouri of Sharif University the plan was updated to 3.4-m Cassegrain. We hope to have its first light in about 10 months time. The present Director of INO is Habib Khosroshi, PhD from IASBS–Zanjan. The site selection for INO was done by an international team of advisors and a team of experts from the Institute for Advanced Studies in Basic Sciences headed by S. Nasiri, PhD, Shiraz University.

The Observational Astronomy Group at IPM hosts a new subgroup with extended expertise in radio and infrared astronomy studying the physics of the interstellar (ISM), massive star formation, the interplay between the ISM and stat formation, and the role of the thermal and non-thermal processes in the ISM in the evolution of galaxies. Observations are performed using the international ground-based and space-based telescopes, some of them led by IPM.

The Astronomical Society of Iran (ASI), though some 45 years old, has expanded and institutionalized its activities since the 1990s. ASI sets up seasonal schools for novices, organizes annual colloquia and seminars for professionals and supports a huge body of amateur astronomers from among high schools and university students. Over 30 of 420 ASI members are also members of IAU and take active part in its events. Last but not least, "Nojum", the Farsi word for astronomy, is the only astronomical monthly magazine of the Middle East. Nojum is founded by Reza Mansouri

and a team of Nojum lovers from among his circle. Nojum celebrated its thirtieth anniversary last spring.

Thanks for attention

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