

Post-doctoral positions at School of Astronomy, IPM

The School of Astronomy (SoA) at the Institute for Research in Fundamental Sciences (IPM) is a leading research institution in the fields of astronomy and cosmology. It is involved in large international scientific projects and collaborations such as the Square Kilometer Array Observatory ([SKAO](#)) and its pathfinders. It also collaborates with the Iranian National Observatory ([INO](#)) which is hosting a 3.4m optical telescope. Specific research topics include star formation and interstellar medium, evolved stars, inflation and dark matter/energy. The SoA invites applicants for several postdoctoral positions for the following projects and topics:

-Star formation and evolution of galaxies with SKAO precursors and pathfinders

The SKAO will soon be the largest radio observatory in the world providing a sensitivity of more than 50 times and a survey speed of ten thousand times higher than those achievable with current radio telescopes. The advent of the SKA will revolutionize our knowledge about the early Universe, galaxy evolution, fundamental physics, cosmology and particles physics. As members of the SKA science working groups, we are studying factors regulating the formation of young massive stars and the evolution of galaxies. Using the radio observations with SKAO precursors/pathfinders such as MeerKAT, LOFAR, and VLA together with those at millimeter/sub-millimeter, infrared, and optical data taken with ground- and space-based observatories such as ALMA, Euclid, and James Web space telescopes, we study various phases and components of the interstellar medium (including magnetic fields, cosmic rays, and dust) and measure star formation rate over cosmic time. Moreover, we are involved in numerical analysis and simulations on related topics. Interested researchers with related background and expertise are encouraged to apply. For further inquiries please contact Fatemeh Tabatabaei (ftaba@ipm.ir).

-Dust Production in Nearby Galaxies

The postdoctoral researcher will focus on studying evolved stellar populations in nearby galaxies to investigate their role in the chemical enrichment of the interstellar medium and galaxy evolution. The researcher will concentrate on the photometric reduction of images obtained from nearby galaxies using both ground-based and space-based telescopes (e.g., INT,

INO, JWST), in order to identify mass-losing Asymptotic Giant Branch (AGB) stars and red supergiants, along with their respective spectroscopic classes. The analysis will involve employing existing tools or developing new methodologies, with the potential incorporation of machine learning techniques. Subsequently, the work will focus on quantifying dust production and mass-loss rates through modeling the multiwavelength spectral energy distributions (SEDs). Additionally, the postdoctoral researcher will apply for observing time with the JWST to expand the coverage of metallicity across observed galaxies by including additional targets. For more information please contact Atefeh Javadi (atefeh@ipm.ir)

-Chemical composition of planetary nebulae

This position is to investigate the presence of heavy molecules in planetary nebulae using advanced spectroscopic techniques. We have developed a novel method for molecular detection, which we now plan to apply to planetary nebulae to uncover new insights into their chemical composition and evolution. Candidates with experience in optical and infrared spectroscopy are particularly encouraged to apply, though those with expertise in radio spectroscopy are also welcome. The position offers the opportunity to work at the intersection of observational astrophysics and astrochemistry, contributing to a deeper understanding of molecular processes in evolved stars. Please contact Amin Farhang (a.farhang@ipm.ir) for more information.

-Theoretical cosmology and gravitation

The theoretical cosmology group at SoA is seeking postdoctoral researchers to work on inflation, dark matter, dark energy, QFT in curved space, and gravitational waves. For more information please contact Hassan Firouzjahi (firouz@ipm.ir) and Mohammad-Hossein Namjoo (mh.namjoo@ipm.ir).

Please note that the positions are funded for 1+1 years with a possibility of an extension for an additional one year, upon satisfactory performance.

To apply, please send a letter stating qualifications and background, a CV including the list of publications, a statement of research interests and at least 2 confidential professional references, of which one should be obtained from the thesis supervisor. **Please also indicate which project you are applying for.**

The deadline for the applications is May 20, 2025 (Ordibehesht 30, 1404).

For more general questions about the application please contact: astro@ipm.ir

Please arrange that the recommendation letters to be sent directly to the above e-mail address before the deadline.

Kindly indicate your preferred field of interest in your application letter.