



## JOB ANNOUNCEMENT

The Istituto Nazionale di Astrofisica – Osservatorio Astronomico di Capodimonte (INAF-OACN) is offering a post-doctoral position in “**Development of deep learning tools for the determination of galaxy structural parameters for Rubin-LSST**”, coordinated by Dr. Crescenzo Tortora. This is part of the project “Partecipazione LSST Large Synoptic Survey Telescope (ref. Adriano Fontana)”, with local PI Massimo Brescia, as *in-kind contribution S9* in the agreement INAF-Rubin LSST.

## RESEARCH PROJECT

The postdoctoral fellow will primarily focus on further developing and implementing a deep learning tool for characterizing the morphology and structure of galaxies within the Rubin/LSST pipeline. This tool is designed to determine structural parameters and morphological details for millions of galaxies once the survey begins. The structural parameters (which include the B/T ratio) will be obtained by fitting single and multiple analytical profiles, across various spectral bands. This approach enables the separation of closely located objects and enhances star/galaxy classification. Additionally, the post-doc will allocate some of their time to applying this tool to former data from, e.g., HSC KiDS@VST, etc. The postdoctoral fellow should possess a strong proficiency in Python-based programming, machine and/or deep learning, structural and morphological analysis of galaxies, as well as knowledge of large field-of-view photometric data reduction and analysis. The post-doc will primarily collaborate with Crescenzo Tortora at INAF – Osservatorio Astronomico di Capodimonte and Nicola R. Napolitano at the Università di Napoli, Federico II, working closely with other colleagues who are experts in machine learning and galaxy evolution in the Napoli area.

## ELIGIBILITY

The appointment is expected to begin by February 1, 2024, and will be for 12 months in the first instance, and renewable afterwards, for additional 12 months.

The yearly gross salary is 28,373.85 Euros, corresponding to a net salary of around 25,000 Euros.

**The deadline for sending applications is January 15, 2024 – 11.59 p.m. (Italian time).**

## REQUIREMENTS

➤ PhD in Astronomy or Physics or equivalent qualification awarded by public or private Universities, Institutions, Research Organizations or Centers or other qualified research



bodies, both in Italy and abroad, in the topics relevant to the scientific and technological area and the research object of this call.

Or alternatively

- Master Degree in Astronomy or Physics or equivalent qualification, together with 3 years of documented experience, awarded by public or private Universities, Institutions, Research Organizations or Centers or other qualified research bodies, both in Italy and abroad, in the topics relevant to the scientific and technological area and the research object of this call.

With the sole scope of admission to this selection procedure, the equivalence of educational qualifications obtained abroad will be verified by the “Selection Committee” as of Art. 8 in the Call, on the basis of documentation forwarded by the candidate as foreseen by Art. 3 of the “Call”, provided that, in case the candidate is the winner of the aforesaid procedure, the Administration will acquire the results of the verification performed by the “Selection Committee” and will forward them together with the documentation listed in Article 3, paragraph 2, letter a) or b) of the Decree n. 189 of the President of the Republic of 30 July 2009, plus the application of the candidate, to the Ministry of University and Research with the scope to acquire the opinion foreseen in Article 4, paragraph 2 of the aforementioned Decree.

### PREFERENTIAL QUALIFICATIONS

We are particularly interested in candidates with expertise in one or more of the following:

- solid expertise in python-based programming,
- solid knowledge in machine learning,
- solid knowledge of structural and morphological analysis of galaxies,
- solid knowledge of photometric data-reduction and analysis.

### APPLICATION PROCEDURE

Applications must be sent via certified e-mail to [inafoanapoli@pcert.postecert.it](mailto:inafoanapoli@pcert.postecert.it);

or, alternatively, via email to [concorsi@oacn.inaf.it](mailto:concorsi@oacn.inaf.it)

In the email subject the applicant should make explicit reference to **“Assegno di Ricerca “Development of deep learning tools for the determination of galaxy structural parameters for Rubin-LSST”, tipologia B” Postdoc**”.

Applications must include the following Annexes dated and signed:

- the Application Form (Annex A);
- the self-certification Form (Annex B);

Up to two reference letters will be appreciated. contacts should address them by the deadline for application to: [inafoanapoli@pcert.postecert.it](mailto:inafoanapoli@pcert.postecert.it), or to [concorsi@oacn.inaf.it](mailto:concorsi@oacn.inaf.it), reporting in the object of the mail:

**“Assegno di Ricerca *in-kind contribution S9*”** and the name of the candidate they are



referred to.

The applicant also needs to attach:

1. a curriculum vitae (dated and signed);
2. a complete list of relevant publications, dated and signed, which should contain all details: title, journals, years of publication, lists of authors, and web addresses on which they can be viewed;
3. a list of all submitted documents.
4. a copy of a valid identification document;
5. any other work or publication the applicant deems useful.

Incomplete or unsigned applications will be rejected.

Napoli, November 27, 2023

Il Direttore  
Dott.ssa. Marcella Marconi