



PhD position in Astronomical Instrumentation – Astrophotonics

Applications are invited for a doctoral student under the supervision of Prof. Lucas Labadie at the *Institute for Astrophysics* of the University of Cologne (Germany).

The project: the proposed position connects to the field of *astrophotonics*, a synergetic partnership between astronomy and photonics that will enable groundbreaking instrumentation for modern telescopes and interferometric arrays (e.g., ELT, VLTI). The project is offered in the context of the project NAIR (“**N**ovel **A**stronomical **I**nstrumentation through photonic **R**eformatting”), an initiative between the **University of Cologne**, the **Leibniz Institute for Astrophysics Potsdam (AIP)** and the **Durham University**. NAIR aims to enable significant progress in the on-sky deployment of innovative photonic-based solutions. It focuses on the integration of small-scale integrated photonic components that simplify the host instruments and their interface to the telescope infrastructure, leveraging the technology transfer from manufacturing platform to astronomical instrumentation. These technologies will be integrated in future astronomical instruments at observatories such as the CHARA array in the US, or the VLTI array in Chile, giving the student unique opportunities to access the most advanced astronomical facilities worldwide.

The role: The doctoral student is primarily based at the Institute for Astrophysics in Cologne. He will pursue an experimental project to develop, characterize and optimize *discrete beam combiners* (DBCs) for astronomical interferometry. The DBCs will be manufactured by ultrafast laser writing (ULI) at the Politecnico di Milano/CNR in the group of Prof. Osellame, bringing the student in close contact with state-of-the-art photonic manufacturing platforms. She/He will lead the research and development phase using the astrophotonics lab at the University of Cologne and at the AIP/Potsdam. Finally, the DBCs will be integrated to the testbed CHARIOT a CHARA and tested on astronomical sources. In parallel, they will be characterized for the instrument BIFROST/VLTI developed in the group of Prof. S. Kraus at the University of Exeter. In addition, the candidate will participate in the development of 3D-printed micro-dispersers directly integrated on to the chip surface. The results will be published in peer-review journals and contribute to the PhD thesis.

The candidate: The applicant should have a Master of Science (MSc) in physics, engineering or a related discipline. She/He should be motivated by the fields of research associated with astronomical instrumentation, optics, photonics and lab demonstrators. A first experience with the technique of ultrafast laser writing is an asset. The working language is English.

Conditions: The position is for **3 years** starting at earliest convenience. The salary is based on the (60%-65%) E13 scale of German civil service. Applicants should send to **labadie@ph1.uni-koeln.de** a single PDF including a CV, educational titles and transcripts and a brief statement of research interests. They must arrange the email addresses of two referees that can be contacted directly. Further inquiries can be made at the same address. The deadline for submission is **17.05.2024**, with the review of applications starting immediately following reception. Late applications will be considered until position is filled. The University of Cologne is an equal opportunity employer in accordance with German laws. Women, minorities and persons with disabilities are strongly encouraged to apply.