

Postdoc position in interferometric exoplanet imaging

Ref. BAP-2021-190

The Institute of Astronomy (IoA) of Leuven University in Belgium is a young and vibrant research group of some 50 scientists, engineers, and administrative staff (fys.kuleuven.be/ster), including 7 full-time and 3 part-time professors. The institute is an expertise center in stellar physics and is active in several international consortia and collaborations, involving telescopes at observatories worldwide and in space. Members of IoA have access to parallel computing facilities at Leuven University. The IoA is responsible for the organization of the 2-year Master in Astronomy & Astrophysics of the Faculty of Science and owns the 1.2m Mercator telescope at Roque de los Muchachos, La Palma Observatory, Canary Islands. The institute has a long tradition in instrumental, observational, and theoretical studies of stellar evolution.

<https://fys.kuleuven.be/ster>

Responsibilities

The spectral characterization and understanding of terrestrial exoplanets is currently one of the most ambitious and challenging long-term goals of astrophysics. All observing techniques with the potential to tackle this challenge face the same limitations: the overwhelmingly dominant flux of the host star and/or the lack of angular resolution. A very promising technical solution around these issues is nulling interferometry, which combines the advantages of stellar interferometry (high angular resolution) and coronagraphy (starlight rejection). With SCIFY (Self-Calibrated Interferometry For exoplanet spectroscopy), we aim at building Hi-5, a thermal near-infrared (3.8 microns) high-contrast nulling interferometric instrument for the visitor focus of the Very Large Telescope Interferometer. We also contribute to the ongoing major VLT facility upgrade within the GRAVITY+ collaboration. By pushing VLT high-contrast capabilities to smaller inner working angles, it will be possible to carry out several unique exoplanet programs to study young Jupiter-like exoplanets at the most relevant angular separations (i.e., close to the snow line), better understand how planets form and evolve, and characterize exozodiacal dust disks. In the long term, the SCIFY project will be a cornerstone in the roadmap leading to the characterization of terrestrial exoplanets and the search for life beyond Earth (see LIFE project page). The SCIFY project is funded by the European Research Council and is hosted by the Institute of Astronomy at KU Leuven.

Through the H2020 Opticon-Radionet Pilot program (H2020-INFRAIA-2020-1), the KU Leuven Institute of Astronomy is advertising a postdoc position to support the integration of Hi-5 with both the ASGAR visitor instrument suite and with the VLT. (S)he will also support the Belgian VLT expertise center activities (<https://fys.kuleuven.be/ster/projects/belgian-vlti-expertise-centre>). The ASGAR Suite is a collection of three visitor instruments bringing novel scientific capabilities to VLT, including high-sensitivity multi-band (H+K), low-RMS fringe tracking (Heimdallr), high-spectral resolution in YJ-band (BIFROST), and L-band high-contrast imaging (Hi-5/VIKING). Two instruments, BIFROST and Hi-5, are fully funded by the European Research Council (ERC) and currently under development. The successful applicant will support the integration of Hi-5/VIKING into ASGAR and the VLT infrastructure in several ways: (1) develop the operational modes for use at the observatory, including optimization of data recording and calibration sequences; (2) produce a commissioning and observing plan; and (3) document the technology design and facility interfaces as required by ESO. Besides, the successful applicant will support the activities of the Belgian VLT expertise center and contribute to the organization of the VLT open days in Leuven in 2023. The selected candidate will join the SCIFY team (currently 2 PhDs, 2 postdocs, 1 engineer) under the supervision of Prof. Denis Defrère and will work as part of an international network of collaborators.

Profile

The postdoc applicant must hold a PhD in astrophysics or an equivalent diploma. The ideal candidates will have a strong observational and data analysis background, including expertise relevant for interferometric analysis (and the VLT in particular). Prior experience with ESO-related projects and student supervision will be viewed positively by the selection committee. Proficiency in English is required.

Offer

The selected Postdoc will be offered a postdoctoral scholarship of one year, with the possibility to extend it for two more years after positive evaluation. The salary will be commensurate to the standard scale for postdoc researchers in Belgium and will depend on the number of years of experience after PhD. The candidate must be in mobility conditions, i.e. not engaged in a principal activity (work, studies, etc) in Belgium for more than 24 months counting from three years prior to the starting date of the postdoctoral scholarship. The foreseen starting date shall be between October 1st, 2021 and January 1st, 2022 but can be negotiated. The postdoc will be encouraged to take up training in science and people management, science communication and grant application writing with the aim to develop a personal independent career track.

Interested?

To apply for this position, please follow the application tool and enclose:

- 1) Full CV, with a publication list and contact details of two reference persons who would be prepared to send confidential recommendation letters;
- 2) A statement of interest (max. one page)
- 3) A summary of the research experience (max. 3 pages)

For more information please contact Mrs. Clio Gielen, tel.: +32 16 37 46 28, mail: clio.gielen@kuleuven.be.

You can apply for this job no later than April 12, 2021 via the online application tool :

<https://www.kuleuven.be/eapplyingforjobs/light/60005698>

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