Physique des Etoiles froides évoluées: de la PhotosPhère à l'EnviRonnement circumstellaire

Postdoctoral position in stellar astrophysics in the framework of funded project PEPPER

Project description: Evolved cool stars are major cosmic engines, providing strong mechanical, chemical, and radiative feedback on their host environment. Through strong stellar winds, still poorly understood, they enrich their environment with chemical elements, which are the building blocks of planets and life. These objects are known to propel strong stellar winds that carry the mass and angular momentum of the stars' surfaces at speeds that vary with stellar brightness, evolution phase and chemical composition. A complete understanding of their evolution in the near and distant Universe can only be achieved with a detailed knowledge of wind physics across the life cycle of these stars as well as in relation to their circumstellar environment. Our project PEPPER, funded by ANR (Agence Nationale de la Recherche), aims at building a coherent and comprehensive description of the mass-loss mechanism through different observational data specially including sprectropolarimetry with state-of-the-art global dynamical simulations, in full 3D geometry. PEPPER includes several nodes in France (Lagrange-Nice, LUPM-Montpellier, IRAP-Toulouse, LAB-Bordeaux, and LESIA-Paris) which represent all the national laboratories where stellar physics and, in particular, evolved stars are actively studied simultaneously from an observational, theoretical, or instrumental point of view.
The post-doctoral researcher will work at the Observatoire Midi-Pyrénées (OMP, Toulouse, France) together with Drs. T. Böhm, A. Lopez Ariste, P. Mathias and P. Petit (IRAP Department, OMP) on the interpretation of spectropolarimetric data (both linear and circular) issued from different instruments to be compared with ouputs of 3D simulations to better constrain the velocity fields that exist on different timescales mainly linked to convection, and tentatively estimate its importance among the physical mechanisms thought to be at the origin of the strong mass loss. More information on project PEPPER can be found at https://lagrange.oca.eu/fr/welcome-to-anr-pepper

Requirements: The successful candidate should have a PhD degree or a foreign degree equivalent to a PhD degree in Astronomy or Physics. By 2022, October 1st, enthusiastic candidates should send:
i) a CV including a publication list (4 pages maximum),
ii) a statement of research interests (2 pages maximum),
iii) arrange for three letters of reference to be provided separately to Philippe.Mathias@irap.omp.eu using “PEPPER postdoc” in the email header.

Additional qualifications: Candidates with practical experience with spectroscopy, polarimetry, including data modeling, will be considered a merit and are strongly encouraged to apply.

Starting date: Later applications will be considered until the position has been filled. The foreseen start date is January, 1st, 2023 (negotiable).

Environment: The postdoctoral researcher will be working at the Observatoire Midi-Pyrénées (www.omp.eu), which hosts the IRAP Department (Institut de Recherche en Astrophysique et Planétologie: www.irap.omp.eu/en/homepage-en/). Toulouse is the fourth-largest city in South-West of France and holds the fourth-largest university campus in France. Toulouse is known as the centre of the European aerospace industry, with the headquarters of Airbus or yet the largest space centre in Europe: CNES. The main site of the Observatory is located South-East of the town, close to CNES, along the Canal du Midi. But the Observatory is multisite and among them, the Pic du Midi Observatory (3000m, 200km South of Toulouse) which hosts the Télescope Bernard Lyot (tbl.omp.eu). Further information can be found here:
https://www.campusfrance.org/en/researcher

Included Benefits:
Position is for two years. Net annual salary is set by national guidelines starting at 27600 € and it is commensurate with the level of experience. Included: National medical insurance, maternity/paternity leaves, family supplement for children, participation to public transport fees, pension contributions. School is free in France for children above 3.

For further information and for submitting the application, please contact Dr. Philippe Mathias (Philippe.Mathias@irap.omp.eu), responsible for the PEPPER Toulouse node. First selection will take place after the deadline (2022/10/01) with subsequent selections thereafter until the position has been filled.