Work visit of an Indian colleague to Belgium

(11/08/2023-17/08/2023)

The first BIPASS visit was a short one of Drisya Karinkuzhi (UOC, India; see picture) to the group of Sophie Van Eck (ULB, Belgium) in Brussels. After a discussion about the plans and strategies for the completion of a few ongoing collaborative projects, the researchers critically analysed feedback and comments received at a recent conference in Munich, Germany. During the discussion, the main scientific topic was the need to conduct non-local thermodynamic equilibrium (NLTE) analyses for determining the abundances of metal-poor stars in order to have a robust understanding of nucleosynthesis.

During this visit, the NLTE version of the TURBOSPECTRUM radiative transfer code was introduced to Drisya Karinkuzhi so that she can now apply it to her research. The two teams decided to re-analyse their sample stars to determine their NLTE atmospheric parameters.

Also discussed during this visit, were the results of the recent analysis of UV-visible spectra of carbon-enhanced metal-poor stars with a focus on r-process elements conducted by Drisya Karinkuzhi. An initial comparison with theory was done during the meeting and found to be well reproduced by the predictions from the intermediate neutron-capture process occurring in low-mass low-metallicity asymptotic giant branch stars. This paper will be submitted soon to the peer-reviewed journal Astronomy & Astrophysics.

The preparation of observing proposals for the High-Efficiency and high-Resolution Mercator Echelle Spectrograph (HERMES) attached to the 1.2-m Mercator telescope (Roque de los Muchachos Observatory, La Palma, Spain) and period 113 of the Ultraviolet and Visual Echelle Spectrograph (UVES) attached to the 8-m UT2 of the Very Large Telescope (VLT) (Paranal Observatory, Chile) were also discussed and the strategies for the identification of new targets were fixed during the meeting. This visit was extremely fruitful with lots of discussions on ongoing and future projects.