

# Postdoc: Quantitative spectroscopy as input for asteroseismic modelling of massive stars observed with the MOST, CoRoT and Kepler space missions

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\*Short project description\*

The IvS is heavily involved in ongoing and future space missions for asteroseismology and exoplanet hunting. These missions provide ultra-precise white light photometric data from which the oscillation frequencies can be derived. A vast number of new massive pulsators (both single and binary stars) has already been found from the MOST and CoRoT missions and more is to come in the near future. The goal of the present project is to provide the necessary spectroscopic information (fundamental parameters, abundances, rotational and pulsational velocity parameters, binary solutions) to perform a seismic modelling of the most interesting single and binary massive pulsators observed with space missions and/or from ground-based network campaigns.

The postdoc shall hold the responsibility to exploit approved spectroscopic observations from ESO/Paranal with FLAMES/VLT and from La Palma with HERMES/Mercator. The postdoc shall also take the responsibility to gather and exploit new spectroscopy with various open-competition telescopes throughout the project.

The gathered spectroscopy will allow an unbiased classification of the detailed spectroscopic properties of numerous massive pulsators to derive their evolutionary status independently from the asteroseismology. The overall goal of the IvS's seismology programme of massive stars is to achieve extensive seismic tuning of stars in the uppermost part of the Hertzsprung-Russell Diagram.

\*Required experience\*

The candidate

- holds a PhD in Astrophysics;
- has an excellent track record of peer-reviewed publications;
- masters all the necessary steps to fully reduce raw echelle spectroscopy;
- is a recognised expert in quantitative spectroscopy of massive stars;
- masters the use of state-of-the-art NLTE atmospheric models and line-prediction codes;
- has good knowledge of tools to interpret binary star data.

Knowledge of asteroseismology and/or automated statistical classification methods are assets, but not requirements. Experience with the reduction and interpretation of FLAMES/UVES@VLT data is an asset.

\*Tasks\*

The postdoc shall

- perform quantitative analyses of high-resolution spectroscopic data of OB stars as input for seismic modelling.
- be involved in asteroseismology research of massive stars within the IvS team, based on MOST, CoRoT and Kepler space data, as well as on ground-based data.
- perform statistical classification and clustering analyses based on