

PhD research fellowship in Astronomy at [Laboratoire d'Astrophysique de Bordeaux](#)

3D kinematics and metallicity of stars in the solar neighbourhood

Location: University of Bordeaux, France

Duration: 3 years

Application deadline: 31 May 2018

Start: 1 October 2018

Supervisor : Caroline Soubiran caroline.soubiran@u-bordeaux.fr

Keywords : stars, stellar kinematics, chemical tagging, galactic archeology, [Gaia](#)

The Laboratoire d'Astrophysique de Bordeaux (LAB) invites applications for a doctoral position related to the scientific exploitation of Gaia Data Release 2 (DR2) published on 25 April 2018 (see special issue in [A&A](#)).

The [Gaia](#) DR2 contains parallaxes and proper motions for more than one billion stars and line of sight velocities for 7 millions stars. The size and precision of this dataset is exceptional to study the stellar distributions around the Sun. In addition chemical compositions available for a growing number of stars make it possible to investigate the correlations between kinematics and abundances among nearby stars. The purpose of this PhD project is to revisit the local stellar populations, moving groups and dynamical streams of different origins which are known to exist in the close solar neighbourhood (~200-300 pc). This complex structure reveals physical processes at work in our Galaxy, the Milky Way. The major task will be to evaluate the metallicity and abundance distribution of each substructure found in the Gaia galactic positions and 3D velocities. This will help to better understand the mixture of effects coming from the initial conditions of the interstellar matter, from the secular evolution of the stellar populations, from the dynamical effect of the galactic bar and spiral arms, and from possible mergers.

The PhD candidate is expected to publish the results of her/his research in international refereed journals and in conference proceedings. She/he will benefit from strong collaborations on Gaia exploitation existing within the LAB and at the international level (Chile, Sweden, USA, Spain, Italy).

The LAB is located on the campus of the Bordeaux University in Pessac. About 30 astronomers work there on a variety of astrophysical topics, ranging from planetary surfaces and atmospheres to star formation and extragalactic astrophysics. The laboratory will ensure that the candidate will have all the necessary supports (computing power, informatic support, administrative and financial support) to conclude positively the project. The beautiful city of Bordeaux offers one of the highest quality of living and a vibrant cultural life, near the Atlantic coast.

The gross monthly stipend is 1768€. The contract administrated by the university of Bordeaux will carry all social benefits stipulated in French employment law such as social security, maternity and parental leave, sick leave, and holidays leave.

Aspiring candidates must hold a degree equivalent to a European Master (5 years of Higher Education) in astronomy or astrophysics. Proficiency in English is required. Experience in observational astronomy is a plus.

Applications should include a cover letter, a curriculum vitae including academic achievements (maximum 2 pages) and a copy of the Master diploma with transcript. The documents should be sent to Caroline Soubiran (caroline.soubiran@u-bordeaux.fr). Applicants should arrange for 1 or 2 letters of recommendation to be sent to the same address.