Univ. Grenoble Alpes
Université de l'innovation

FICHE NAVETTE: DOCTORANTS IDEX

SECTOR **:** Higher Education Institution

LOCATION: France, Grenoble

RESEARCH FIELD:

RESEARCHER PROFILE:

□ *First stage researcher,*

INSTITUTION: Univ. Grenoble Alpes, University of Innovation

One of the major research-intensive French universities, Univ. Grenoble Alpes**[1] enjoys an international reputation in many scientific fields, as confirmed by international rankings. It benefits from the implementation of major European instruments (ESRF, ILL, EMBL, IRAM, EMFL*[2]). The vibring ecosystem, grounded on a close interaction between research, education and companies, has earned Grenoble to be ranked as the 5th most innovative city in the world. Surrounded by mountains, the campus benefits from a natural environment and a high quality of life and work environment. With 7000 foreign students and the annual visit of more than 8000 researchers from all over the world, Univ. Grenoble Alps is an internationally engaged university.

A personalized Welcome Center for international students, PhDs and researchers facilitates your arrival and installation.

In 2016, Univ. Grenoble Alpes was labeled «Initiative of Excellence ". This label aims at the emergence of around ten French world class research universities. By joining Univ. Grenoble Alpes, you have the opportunity to conduct world-class research, and to contribute to the social and economic challenges of the 21st century ("sustainable planet and society", "health, well-being and technology", "understanding and supporting innovation: culture, technology, organizations" "Digital technology").

* ESRF (European Synchrotron Radiation Facility), ILL (Institut Laue-Langevin), IRAM (International Institute for Radio Astronomy), EMBL (European Molecular Biology Laboratory), EMFL (European Magnetic Field Laboratory)

Key figures:

- + 50,000 students including 7,000 international students
- 3,700 PhD students, 45% international
- 5,500 faculty members
- 180 different nationalities
- 1st city in France where it feels good to study and 5th city where it feels good to work
- ISSO: International Students & Scholars Office affiliated to EURAXESS

[1] Univ. Grenoble Alpes

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MANDATORY REFERENCES:

CDP TITLE: Origin of Life
SUBJECT TITLE: Search of exoplanets in the close solar neighbourhood
SCIENTIFIC DEPARTMENT (LABORATORY'S NAME): IPAG
DOCTORAL SCHOOL'S: ED Physique
SUPPORTER'S NAME*: Xavier Delfosse and Xavier Bonfils*

SUBJECT DESCRITION:

The Exoplanet group at the "Institut de Planétologie et d'Astrophysique de Grenoble" (IPAG) is offering a PhD position. The project is funded by the IDEX program "Origin of Life" of the Grenoble-Alpes University. Starting on Oct, 2018, the successful applicant will contribute to the detection of planets orbiting the nearest M dwarfs, hence building the sample of planets amenable to characterization for the ELT era.

Context: The prime goal of the thesis is to discover exo-Earths and super-Earths which atmospheres can be observed and characterized in the near future. Until recently, this objective was restricted to transiting planets which can be studied with transmission and occultation spectroscopy. But transiting planets are so rare (the closest transit is at 12 pc) that a new strategy is being developed for the most general case of non-transiting planet. Forthcoming Extremly Large Telescopes (ELT) will soon be able to resolve non-transiting exo-Earths orbiting the habitable-zone of the most nearby stars. In reflected light, the contrast between planet and host stars will be more favorable for planets orbiting M dwarfs compared to Sun-like stars (10^{-7}, instead a few 10^{-10}) and, although it remains challenging, it appears to be technologically feasible when both high contrast imaging and high spectral resolution techniques are combined (Snellen et al. 2015; Lovis et al. 2017). The census of nearby planets orbiting M dwarfs, and especially those orbiting whithin the habitable zone of their host, has thus become a prime objective of current planet surveys.

PhD Subject: SPIRou, the new near-infrared spectropolarimeter and velocimeter for the Canada-France-Hawaii Telescope, is poised to bring a major contribution to this field. M dwarfs are much brighter in the near infrared and SPIRou is the first near infrared velocimeter designed to reach the meter-per-second precision. Together with our canadian colleagues, our team will lead a large Radial Velocity (RV) survey starting in Sept-Oct 2018. This project shall be highly competitive to search for low-mass planets orbiting M-dwarfs. The PhD thesis will focus on state-of-the-art regression analysis (Markov Chain Monte Carlo, Gaussian Processes, …) to optimize planet detection of faint signals in RV time series and to derive optimal parameters. This includes fine ephemeris to pass the detected candidates to photometric facility for transit searches. The PhD student will also contribute to the monitoring of the instrument, to the characterization and correction of its systematics, and to the specific RV diagnostics brought by infrared velocities. This work will have one focus : to optimize the search for planets in the close solar neighbourhood, and will provide the PhD student with the skills of an infrared-RV specialist.

Candidate profile: The Exoplanets group is seeking to hire a PhD student to participate to the "Origin of life" project. He/She should have a training in Astrophysics with a strong interest in data processing. Past experience, during research internship, in radial velocity analysis would be appreciated.

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ELIGIBILITY CRITERIA
Applicants:
- must hold a Master's degree (or be about to earn one) or have a university degree equivalent to a European Master's (5-year duration),

Applicants will have to send an application letter in English and attach:
- Their last diploma
- Their detailed CV
- Their grades obtained during Master 1 and Master 2
- A letter of motivation (2 to 3 pages max)
- Letters of recommendation are welcome.

Address to send their application: xavier.delfosse@univ-grenoble-alpes.fr and xavier.bonfils@univ-grenoble-alpes.fr

SELECTION PROCESS
Application deadline: **01 June 2018** at 17:00 (CET)de
Applications will be evaluated through a three-step process:

1. 1st round of selection: the applications will be evaluated by a Review Board in the week of 11 June 2018. Results will be given the 15 June 2018.
2. If necessary a 2nd round of selection will be organized: shortlisted candidates will be invited for an interview session in Grenoble or by skype during the week of 18 June 2018. (if necessary)
3. Eligibility check by doctoral school early July
4. Beginning of the PhD : October or November 2018

TYPE of CONTRACT: temporary-3 years of doctoral contract
JOB STATUS: Full time
HOURS PER WEEK: 35
OFFER STARTING DATE:
APPLICATION DEADLINE: **01 June 2018**
Salary: between 1768.55 € and 2100 € brut per month (depending on complementary activity or not)

Financements de la thèse : si co-financements, préciser la durée de chacun des financements et l'organisme ou l'institution partenaire