

PhD position – Modelling of microorganisms in extraterrestrial environments

The Exoplanets and Origins of Life research group (www.saintex.unibe.ch) at the University of Bern's Centre for Space and Habitability (CSH) invites applications for a PhD position part of the new ERC *SenseLife* project, which aims at remotely detecting traces of past or present life in the Solar System.

The PhD will focus on the modelling and experimental acquisition of the polarisation signals of microorganisms that are relevant candidates for extinct/extant life in the icy moons of the solar system (e.g. methanogens, sulphur-reducing bacteria). Polarimetric data will be obtained from laboratory experiments (including anaerobic cultivation of microorganisms and their molecular identification) and will be combined with data retrieved during field campaigns (in e.g. mountain lakes and glaciers). The data will be compiled into a library of biosignatures that will be used to reconstruct, identify and benchmark specific polarisation spectra per metabolic niche using Bayesian methods. The results of this endeavour will then be used to assess the potential of spectro-polarimetry for the remote detection of life in extraterrestrial environments.

The successful candidate will join an interdisciplinary team with expertise spanning astrophysics, microbiology, biomedicine and engineering. The new group member will also have the opportunity to be involved in other key activities of the group, such as medical instrumentation for cancer research and surgery at the Faculty of Medicine of the University of Bern.

Profile

We are looking for a creative and motivated candidate, a team player, with a MSc degree in physics, mathematics, chemistry, biology or computer science. Expertise in numerical modelling and optics (in particular polarisation) is an asset but not mandatory. Excellent oral and written skills in English is a requirement.

What we offer

The position is based at the Centre for Space and Habitability, which strives to investigate key questions in space sciences through interdisciplinarity. *SenseLife* collaborates tightly with the Microbiology Laboratory of the University of Neuchâtel where the lab measurements are conducted. The city of Bern is well known for its quality of life, cultural richness and beautiful surroundings offering plenty of opportunities for outdoor activities.

The position is funded for a period of 4 years. The annual salary is competitive and there is ample funding for travel, publications and computing resources. Child allowance and maternity/paternity leave are offered.

Application

Applications are invited from all nationalities and should consist of 1) a 2-page cover letter detailing your interest in joining the group and in the PhD topic, 2) a CV, 3) transcripts of your grades of courses obtained during your bachelor's and master's degrees, as well as 4) two letters of recommendation to be sent by the referees themselves.

Application materials should be submitted in a single PDF file to info.csh@unibe.ch with the mention "SenseLife PhD position" in the subject line. The review of the applications will start immediately and will continue until the position is filled.

The latest expected start date is 1 October 2023.

The University of Bern is committed to equality, diversity and inclusion. Individuals from underrepresented groups are particularly encouraged to apply.

Contact

Queries can be sent to Prof. Dr. Brice-Olivier Demory (brice.demory@csh.unibe.ch), Head of group.