



DAAD

Deutscher Akademischer Austausch Dienst
German Academic Exchange Service

German Aerospace Center (DLR) Berlin
Institute for Planetary Research – Department of Planetary Physics

PostDoc Position in Planetary Physics / Geophysical Fluid Dynamics

We invite applications for a 2-year postdoctoral fellowship in planetary physics / geophysical fluid dynamics on **modelling particles settling and entrainment in turbulent magma oceans**. The position, which is intended for non-German researchers and is part of the [DLR-DAAD fellowship programme](#), will be based at the [Department of Planetary Physics](#) of the [German Aerospace Center \(DLR\)](#) in Berlin.

The project will be conducted in the group of [Dr. Nicola Tosi](#) (DLR and Technische Universität Berlin) in close collaboration with [Dr. Enrico Calzavarini](#) (Université de Lille).

Project description

The early differentiation of the mantle of the Earth and terrestrial planets, i.e. the formation of their initial compositional distribution, takes place upon crystallization of deep magma oceans. The extent of the differentiation depends on whether, upon solidification, crystals tend to settle or be kept in suspension in the turbulent magma ocean. The successful candidate will perform high-performance simulations of particle dynamics in convective turbulent flows at conditions relevant for the early evolution of terrestrial planets. The main tasks include: 1) implementing algorithms for Lagrangian particle tracking in existing computational fluid dynamics codes; 2) conducting extensive numerical simulations of particle-seeded turbulent flows in 2D and 3D geometries; 3) handling large numerical databases and performing statistical data analysis; 4) derive suitable scaling laws applicable to the early differentiation of planetary mantles.

Qualifications

PhD in fluid dynamics, geophysics, astrophysics or in a related, strongly modelling-oriented field completed within the last two years. Excellent abilities in numerical modelling and high-performance computing. Demonstrated programming experience in a high-level language, preferably C and/or C++.

Application

Applications for the [Fellowship 323](#) “Particles settling and entrainment in turbulent magma oceans” must be submitted through the [DAAD portal](#). Details about the salary and application requirements can be found [at this link](#).

Contact

For every information about the project and the application, please contact Nicola Tosi (nicola.tosi@dlr.de) and Enrico Calzavarini (enrico.calzavarini@polytech-lille.fr).