



PhD student position in numerical modeling of clouds

The [Microphysics of Clouds](#) research group at the [Institute of Geophysics](#) is searching for a PhD student to work in a project entitled "[Stochastic versus deterministic origin of warm rain](#)" funded by the Polish National Science Centre.

Good understanding of rain production in clouds is necessary for numerical weather forecasting and for future climate prediction. There are some fundamental unresolved questions about the production of rain in liquid-water clouds. Rain in clouds is produced through collisions of cloud droplets. Some "lucky droplets" can grow much faster than average droplets, thus leading to faster production of rain. Our research group studies clouds using a novel numerical model, University of Warsaw Lagrangian Cloud Model (UWLCM). The PhD student will apply the UWLCM to study the "lucky droplets" effect.

The PhD student will have an opportunity to improve her/his programming skills by developing the UWLCM. UWLCM uses the Large Eddy Simulation model for fluid flow and a recently-developed Monte Carlo approach to Lagrangian modeling of water droplets (the *superdroplet* method). To achieve high performance, calculations are done simultaneously on CPUs and on GPU accelerators. The model is coded in C++ and uses OpenMP for multithreading and CUDA for GPU support. Implementation for distributed memory systems is currently being developed using Message Passing Interface. Computations will be performed on modern supercomputers, such as Prometheus at the Cyfronet AGH center.

We offer

- 3000 PLN (about 700 €) per month net scholarship funded by the National Science Centre in addition to a scholarship that can be awarded to the best applicants for PhD program at the University of Warsaw (see [Applications](#))
- collaboration with partners from USA and Japan
- opportunity to travel to international conferences and summer schools

Requirements

- MSc in physics, mathematics, informatics, engineering, Earth sciences or related field (MSc degree must be obtained no later than September 2019)
- knowledge of Linux OS and C++ programming language
- good command of written and spoken English
- experience in numerical modeling of physical processes will be advantageous

Applications

Applications, consisting of a CV, cover letter, diplomas and contact information for at least one reference person, should be submitted by email to piotr.dziekan@fuw.edu.pl no later than **21.06.2019**.

The candidate will need to be enrolled in one of the [Doctoral Schools of Exact and Natural Sciences](#) at the University of Warsaw. We encourage candidates to apply for Earth and Environmental Sciences or Physical Sciences Doctoral School.

Candidates will be informed about the outcome of the procedure not later than on 16 July 2019.