Project SHENG of the National Science Centre, Poland consortium of IMGW-PIB and IMP PAN	**IMGW** Institute of Meteorology and Water Management National Research Institute
Numerical modelling of dispersed turbulent flows considering particle-scale interactions	NATIONAL SCIENCE CENTRE POLAND

Opening for post-doc position

Numerical modeling of dispersed turbulent flows
considering particle-scale interactions

*Institute of Meteorology and Water Management – National Research Institute,
Warsaw, Poland*

About the project

In the framework of Chinese-Polish collaboration in the fundamental research, supported by the National Science Centre (NCN, Poland), the present project SHENG is focused on the development of computational methods and detailed analysis of turbulent flows containing small water droplets. The problem is of major relevance in meteorology for cloud microphysics and the warm rain formation. It is also of general interest in various industrial applications. They are at the crossroads between academic research and practical concerns (e.g. droplet coalescence/breakup in sprays or short-time relative particle dispersion). For a popular description see: https://ncn.gov.pl/konkursy/wyniki/2019-04-26-sheng1?language=en the button "Funding scheme", choose "SHENG-ST", Position No.7.The main aim of the project is further development of the numerical model for direct numerical simulation (DNS) by implementing a special module for representing aerodynamic interactions between particles. This massively parallel MPI code will be used to study statistics, structure, dynamics of small-scale turbulence and dynamics of suspended inertial particles.

The offer

We offer a **post-doc** position for 24 months

- in the Department for Numerical Weather Forecasts COSMO, IMGW-PIB Warsaw, Poland (www.imgw.pl/en/).
A full time (40 h/week) position is funded by the Polish National Science Centre (NCN). There are no constraints as to the nationality of the applicant, although there are no relocation or home-travel funds offered. In addition to a competitive salary, the candidate will have an opportunity to take part in national and international conferences to present his/her research findings, also, when justified, to participate in summer schools, workshops. A research stay (a few weeks) at the Shenzhen University, China, the project partner, is foreseen as well.

Tasks

The project is of theoretical and numerical nature: it involves simulations of two-phase flows with the dispersed phase in the form of small droplets, applying an Eulerian-Lagrangian

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approach implemented in an in-house, state-of-the-art, highly parallel and efficient code. The candidate will use and further develop the code, introducing new physical and mathematical models. For further information, please contact dr hab. Bogdan Rosa prof. IMGW-PIB by phone (+48 22 56 94 362) or email (bogdan.rosa@imgw.pl).

Requirements

We are looking for a motivated candidate with intellectual curiosity, willing to work in the research environment against tight deadlines, ready learn and gain new experience. Specific requirements:

- PhD in physics, applied mathematics or engineering (mechanical, chemical, aerospace or related field), preferably related to turbulent flows
- proven publication record: peer-reviewed journal papers and international conference contributions
- skilled in mathematical thinking, physical approach to the problems,
- working knowledge in Computational Fluid Dynamics; familiarity with multiphase flows will be a plus
- strong motivation, proven ability to work independently
- knowledge of Linux OS and good skills in programming languages: Fortran or C or C++, Python or alike (for the numerical data postprocessing)
- operational knowledge and development experience of CFD software and/or parallel computing will be an asset
- good command of written and spoken English
- well-organised person with good analytical and communication skills.
- strong motivation, proven ability to work independently

Selection procedure

Submission of applications will be possible through May 20, 2020.

The applications should include a cover letter, information clause, CV, photo, all transcripts, diplomas, list of publications, and contact information for two reference persons. As the motivation for fundamental scientific research of practical relevance is essential, applicants are required to point out in their cover letter how the project will build upon their previous education, research and competence.

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal suitability, as well as motivation, in terms of the qualification requirements specified in the advertisement.

Please submit your application by regular mail to: IMGW-PIB, Podleśna 61, 01-673 Warsaw, Poland or by e-mail to bogdan.rosa@imgw.pl with the annotation / subject line: "Post-doc application: Sheng".

If needed, selected Candidates may be invited for an interview (in person or via videoconference on Internet).

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Information clause

Institute of Meteorology and Water Management − National Research Institute with its seat in Warsaw (01-673), ul. Podleśna 61, Poland is the administrator of personal data. Contact data to the Personal Data Protection Inspector: iodo@imgw.pl. Personal data are processed on the grounds of art. 6 paragraph 1 letter a and b of the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

The data may be transferred to The Szewalski Institute of Fluid-Flow Machinery Polish Academy of Science (IMP PAN), ul. Fiszera 14, 80-231 Gdańsk, Poland. Contact data to the Personal Data Protection Inspector in IMP PAN: iod(at)imp.gda(.)pl. The data are not transferred to international organizations or third countries.

The period of data storage is regulated by Office instruction of IMWN-NRI, which is based on the bill of 14th July 1983 on national archival resource and archives (Dz. U. z 2020 r. poz.164).

The data will be used solely in order to complete the recruitment process and sign a contract with the chosen candidate. The applicant has the right to correct or delete the data, restrict processing of the data or their transfer. The applicants have the right to access their own data, right to withdraw their consent at any time and to lodge a complaint to the President of the Personal Data Protection Office. Provision of personal data is voluntary, based on legal provisions. Failure to provide personal data will result in impossibility of a given application to be taken into account in the recruitment process. There is no automated decision-making nor profiling based on personal data.

I herby consent to the processing of my personal data in order to obtain data of the IMWN-NRI in accordance with art. 6 paragraph 1 letter a and b of the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation). I can withdraw my consent at any time by means of a declaration sent to the IMWN-NRI with its seat in Warsaw (01-673), ul. Podleśna 61, Poland.

All applications must contain the above specified consent in order to be processed. Lack of such consent will render any application null and void. The consent may be submitted in writing or as a form of a signed and scanned document at any of the addresses specified in the announcement.

(date and signature)

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