Call for a post-doc position in OPUS 25 research project

Systems Research Institute, Polish Academy of Sciences (SRI PAS) announces a recruitment for one post-doc position in the research project: "Mathematical control theory in problems arising in flow-structure interactions", financed by the National Science Centre (NCN) (grant no. UMO-2023/49/B/ST1/04261).

Type of NCN Project: OPUS 25 – ST1.

Project: Mathematical control theory in problems arising in flow-structure interactions

Principal Investigator: Professor Irena Lasiecka

Position in the Project: post-doc position

Institution: Systems Research Institute, Polish Academy of Sciences

Requirements:

1. Doctoral degree in mathematics or applied mathematics or automatic control.
2. Expertise in modeling and control analysis related to coupled models with interaction between fluids/gas and elastic structures, such as plates and shells.
3. Experience with numerical/computational procedures relevant to hyperbolic PDE's.
4. Expertise in the study of stability of hyperbolic-like PDE's.
5. Good command of English.
6. The candidate should meet the formal requirements in accordance with the regulations for post-doc position in research projects financed by the National Science Centre (see regulations available at the following link: https://www.ncn.gov.pl/sites/default/files/pliki/uchwaly-rady/2023/uchwala23_2023-zal1_ang.pdf); in particular, it is required that the candidate:
    a. has been conferred a PhD degree in 2024 or within 7 years before 1 January of 2024 (this period may be extended as specified by the above mentioned regulations)
    b. did not have the Professor Irena Lasiecka as the research supervisor or auxiliary supervisor of his or her PhD dissertation
    c. PhD degree has been awarded by another institution than SRI PAS, or candidate has completed a continuous and evidenced post-doctoral fellowship of at least 10 months in another institution than SRI PAS outside of Poland
    d. at the time of receiving remuneration from the Project, will not be receiving any other remuneration paid from the funds granted to research projects under NCN calls in the category of direct costs
    e. at the time of receiving the remuneration from the Project will not be receiving any remuneration from another employer pursuant to an employment contract, including an employer with registered office outside of Poland

Selection process

A scientific recruitment committee will be established by the director of SRI PAS to evaluate the candidates based on the applications submitted and to select the one to be admitted. The candidates

may be requested to take part (remotely) in an interview, if needed. The final evaluation will take into account meeting by a candidate the requirements/criteria mentioned above and, in particular:

- candidate's scientific achievements, including publications in reputable scientific publishers/journals,
- achievements resulting from scientific research, awards and scientific experience gained in Poland or abroad, scientific workshops and trainings, participation in research projects,
- competence to carry out specific tasks in the research project.

The decision of the scientific committee cannot be appealed.

General description of the project:

This project deals with coupled model of gas and structure with an interface. Gas is described by unstable linearization of the Euler equation, while the structure corresponds to a system of nonlinear dynamic elasticity, such as plate or shell models.

The interaction between two environments is accomplished via aeroelastic potential (acting on the structure) and downwash (acting on the boundary of gas domain).

Literature related to the project:

I. I. Lasiecka, J. Webster, Feedback stabilization of a fluttering panel in an inviscid subsonic potential flow, SIAM Journal Mathematical Analysis, 48(5), pp. 1848-1891, 2016.
II. M. Ignatova, I. Kukavica, I. Lasiecka, A. Tufaha, Small data global existence for a fluid-structure model, Nonlinearity, 30(2), pp. 848-898, 2017.
III. I. Lasiecka, K. Szulc, A. Zochowski, Boundary control of small solutions to fluid-structure interactions arising in coupling of elasticity with Navier Stokes equation under mixed boundary conditions, Nonlinear Analysis: Real World Applications, 44, pp. 54-85, 2018.
IV. H. Cavit, I. Lasiecka, T. Levajkovic, A. Tufaha, The stochastic linear quadratic control problem with singular estimates, SIAM Journal on Optimization, 55(2), pp. 595-626, 2017..
V. I. Lasiecka, R. Monteiro, Ma To Fu, Global smooth attractors for dynamics of thermal shallow shells without vertical dissipation, Transactions of AMS, 371(11), pp. 8051-8096, 2019.
VI. I. Lasiecka, M. Pokojovy, X. Wan, Long-time behavior of quasilinear thermoelastic Kirchhoff-Love plates, Nonlinear Analysis, 186, pp. 219-258, 2019.
VII. L. Bociu, L. Castle, I.Lasiecka, A. Tufaha, Minimizing drag in a moving boundary fluid-elasticity interaction, Nonlinear Analysis, 197, 2020.
VIII. I. Lasiecka, B.Priyasad, R. Triggiani, Uniform stabilization of 3D Navier-Stokes equations in low regularity Besov spaces, Archives of Rational Mechanics and Analysis, 241, pp. 1575-1654, 2021.
IX. D. Bonheur,F. Gazzola, I. Lasiecka, J. Webster, Long-time dynamics of an extensible hinged-free plate driven by a non-conservative force, Annales de l'Institut Henri Poincare. Annales: Analyse Non Lineaire/Nonlinear Analysis, NonLin, 39 (2), pp. 457-500, 2022.

Responsibilities of the candidate:

- Analysis of the decay estimates for flat models subjected to boundary dissipation.
- Analysis of stability in time of weak solutions in the case of plate models.
- Analysis of the regularity of solutions describing systems with fluid-elastic body interactions.
- Computational simulation of free solutions and solutions which are controlled.
- A study of the connection of rate of convergence of the algorithms with the imposed regularity of solutions, the latter being geometry dependent.

- Working closely with project team members under the supervision of the Principal Investigator

Location of the workplace: Systems Research Institute, Polish Academy of Sciences, Newelska 6 street, 01-447 Warsaw, Poland

What we offer:

1. Post-doc contract.
   Initially for 12 months with the monthly salary of: 10 000 PLN gross, with the possibility of extension of the contract for up to the end of the project, i.e., up to 31.12.2026.
2. Work in a leading scientific group in friendly atmosphere.
3. Perspective of publishing articles in high impact journals.
4. Possibility of participation at the conferences on topics of.
5.

Conditions of the call and employment:

Post-doc position: 10 000 PLN gross per month, contract for 12 months with the possibility of extension.

Expected position starting date: 1.09.2024.

Call announcement date: 13.08.2024.

Application deadline**:** 23.08.2024, 23:59 CET.

Results to be announced by: 28.08.2024, at SRI PAS website (http://www.ibspan.waw.pl).

Please submit the following documents via email to**:** jan.owsinski@ibspan.waw.pl with subject "OPUS 25 – post-doc application".

Information required**:**

1. Motivation letter (in English).
2. CV (in English) containing information on:
   a. education,
   b. scientific achievements, including scientific publications, popular science articles, conference announcements,
   c. achievements resulting from conducting scientific research, scholarships, awards, scientific experience, workshops, and scientific training as well as participation in research projects,
   d. competences to carry out the tasks provided for in the project.
3. A copy of doctoral thesis and diploma with transcript.
4. List of scientific publications.

In your CV, please include the following consent clause for the processing of personal data in the recruitment process:

"I consent to the processing of my personal data for the purposes necessary for the recruitment process (in accordance with the Act of 10 May 2018 on personal data protection (Journal of Laws of 2018, item 1000) and in accordance with the Regulation of the European Parliament and of the Council (EU) 2016/679 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 (RODO)). Data will be proceeded by the Systems Research Institute of the Polish Academy of Sciences, Newelska 6 street, 01-447 Warsaw, Poland, in order to carry out the recruitment process and publishing the full results of the competition on the Institute's website".

The assessment of candidates' applications will be carried out by the competition committee in accordance with the regulations for awarding research post-doc positions in NCN projects.

Information clause for the recruitment process

1) the controller of the personal data processed in the course of the recruitment process is the Systems Research Institute Polish Academy of Sciences, with its registered office at 6 Newelska Street, 01-447 Warsaw, Poland,

2) contact with the data protection officer is possible at the e-mail address iod@ibspan.waw.pl,

3) personal data will be processed for the purpose of the current recruitment procedure, on the basis of the consent given (Article 6(1)(a) and (Article 6(1)(c) of 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 - GDPR),

4) the data subject has the right to withdraw consent at any time, without affecting the lawfulness of processing based on consent before its withdrawal,

5) data collected in the course of recruitment processes shall be stored for a period not longer than one year,

6) the data subject has the right to access their personal data, and to request that they be rectified or erased. If erasure of personal data is requested, this shall be equivocal to resignation from participation in the recruitment process carried out by the Systems Research Institute Polish Academy of Sciences in Warsaw.

7) the data subject has the right to file a complaint to the President of the Personal Data Protection Office (PUODO) with regard to unlawful processing of personal data. PUODO will be the authority competent to review the complaint, with the proviso that the right to complain applies solely to the processing personal data and not to the course of the recruitment process.