

Opening for PhD stipend position– Investigating reference free SHM techniques using optical fibre sensors for GW based SHM

In the frame of SONATA project (2020/39/D/ST8/00188) entitled: “Guided waves based reference-free structural health monitoring using fiber Bragg grating sensors (REF-FREE)” funded by the National Science Centre, Poland at *Institute of Fluid-Flow Machinery, Polish Academy of Sciences, Gdańsk, Poland*

About the project

We are looking for a talented person with a current Doctoral student status in Poland and who is interested in continuing his scientific work. The project is looking to recruit one stipend holder for **5 months**. The research will be realised at the Department of Mechanics of Intelligent Structures.

The aim of research will be a detailed investigation of the use of optical fibre sensors for reference free SHM using guided waves. The measurement of the GW will be carried out by the use of fiber Bragg grating (FBG) sensors in different configurations.

In the frame of the project, baseline-free damage strategies will be implemented making use of different unique phenomena such as self-referencing shown by different FBG sensors. The actuator-sensor network will be designed to capture different damage scenarios under varying ambient conditions. The scope of the work includes numerical simulation, analytical development and experimental validation. The work will cover different materials including metallic and composite samples. The problem of optimization of sensor placement will be investigated as well.

The offer

We offer a stipend position

- in the Department of Mechanics of Intelligent Structures, IMP PAN Gdańsk, Poland (<http://www.imp.gda.pl/en/o4/z1/>).

A full time position funded with a stipend amounting to 5000 zł/month (Gross-gross- includes employer and employee contribution to social security and taxes). The expected start date is 1st November 2024.

Eligibility criteria

1. Masters in mechanical engineering, material science, physics or related fields.
2. High average grade obtained during studies.
3. Good knowledge of written and spoken English.
4. High motivation for scientific work and a strong commitment to research work.
5. Current doctoral student status in Poland

6. At the time of receiving remuneration, they will not be receiving any other remuneration paid from the funds granted to research projects under NCN calls under the heading of direct costs;

Tasks

1. Numerical research related to methods for modelling of propagation of elastic wave in solids.
2. Experimental investigation of the damage sensitive features captured by the FBG
3. Development of algorithms for damage detection in Matlab
4. Development of algorithms for interfacing and synchronizing between the apparatus
5. Signal processing and results analysis.
6. Preparation of reports based on results analysis.
7. Preparation of journal and conference publications.
8. Presentation of results at scientific conferences related to research topics.
9. Communication and discussion of results within the research team.
10. Communication of results to general public through participation in outreach activities

Skills/Qualifications

1. Masters in mechanical engineering, material science, physics or related fields.
2. High average grade obtained during studies.
3. Good knowledge of written and spoken English.
4. High motivation for scientific work and a strong commitment to research work.

Specific Requirements

We especially seek candidates who:

- possess knowledge about numerical methods and modelling in FE modelling software,
- have programming skills,
- are able to write code in Matlab language.
- mobility and flexibility for attending conference and research stays abroad.

In addition, the following will be assessed:

- the candidates' scientific track record (publications, conferences, projects, scholarships, etc.),
- the prizes and distinctions of the candidate resulting from the research carried out.

Selection procedure

Selection process is in accordance to National Science Centre regulations.

1. Submission of applications is possible through **13th October, 2024**.
2. The results of the recruitment will be published by 20th of October 2024
3. The candidate is expected to join latest by 1st December 2024 (ideally 1st November).
4. Form of applications: Applications in English can be sent by e-mail to rsoman@imp.gda.pl with a subject "PhD student in Sonata project application attn.: Rohan Soman".
5. Candidates interested in applying for the positions should submit the following documents:
 - Cover letter
 - CV / scientific resume
 - copy of the certificate of Master degree
 - the list of scientific achievements (publications, participation in research projects, participation in conferences, awards, scientific stays, etc.)
 - optional: letter(s) of recommendation obtained from people (e.g. supervisors, former managers) directly cooperating with the candidate.
 - **Document confirming the current doctoral student status**
6. The application must contain information about the educational background and work experience.
7. Please, attach the requested documents in the PDF format.
8. During the recruitment process the selected candidates may be invited for an interview (in person or via internet).
9. The result of the recruitment procedure will be sent to the candidates via email.
10. Please include in the application the following statement:
"I hereby authorize to process my personal data included in my application for the needs of the recruitment process (in accordance with the Act of 08.20.1997 r. on personal data protection - Dz. U. No 133, item 883) ".

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

Additional questions could be sent by email to Rohan Soman: rsoman@imp.gda.pl