

Opening for a PhD student position

– Guided wavefield processing and analysis for damage detection in composite materials

In the frame of the OPUS project (2022/47/B/ST8/02963) entitled: “Health assessment of composite structures based on multipoint, broadband excitation of guided waves and full wavefield analysis.”

funded by the National Science Centre, Poland

Institute of Fluid-Flow Machinery, Polish Academy of Sciences, Gdańsk, Poland

About the project

We are looking for a talented person holding an MSc title, who is interested in continuing her/his scientific work and writing a doctoral dissertation. The research will be realised at the Department of Mechanics of Intelligent Structures (<http://www.imp.gda.pl/en/o4/z1/>).

The aim of the research is the development of a robust non-destructive method for damage detection, visualization and assessment in composite structures using guided wavefield analysis. The hypothesis is that using multipoint broadband excitation of guided waves in composite specimens allows for subsurface damage and debonding visualization and assessment with high resolution and reliability. Numerical and experimental research of guided waves will be performed for several specimens composed of different composite materials, various geometry and type of damage scenarios. Disbonds, delaminations and barely visible impact damage will be tested. A comparative study of various literature known techniques for full wavefield processing will be prepared followed by usability evaluation. Additionally, benchmark data for other researchers and further studies in the field will be created.

The offer

We offer a PhD position:

- in the Department of Mechanics of Intelligent Structures, IMP PAN Gdańsk, Poland (<http://www.imp.gda.pl/en/o4/z1/>).
- position funded with a PhD scholarship is offered for 36 months
- the monthly amount of the PhD scholarship is 4400 PLN/month gross (ca 3900 PLN/month net).

Eligibility criteria/ Skills/Qualifications

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

Tasks

1. Implementation of literature-known NDT techniques based on guided wavefield processing in Matlab.
2. Comparative studies of guided wavefield-based NDT techniques.
3. Research on wideband and multipoint guided wave excitation.
4. Preparation of benchmark datasets.
5. Preparation of reports based on results analysis.
6. Preparation of journal and conference publications.
7. Presentation of results at scientific conferences related to research topics.
8. Communication and discussion of results within the research team.

Specific Requirements

We especially seek candidates who:

- possess knowledge in the field of mechanical engineering
- possess knowledge of signal/image processing
- have experience with the Matlab environment, and the ability to write codes in Matlab
- mobility and flexibility for conference travels.

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

The selection process is in accordance with National Science Centre regulations.

1. Submission of applications is possible until **September 4, 2023, 1:00 PM**
2. Form of applications: Applications in English can be sent by e-mail to **tsdpan@imp.gda.pl** with the subject “PhD student in OPUS 23 GW”.
3. Candidates interested in applying for the position should submit the following documents:
 - cover letter
 - CV / scientific resume
 - copy of the certificate of Master’s degree
 - optional: letter(s) of recommendation obtained from people (e.g. supervisors, former managers) directly cooperating with the candidate.

4. The application must contain information about the educational background and work experience.
5. Please, attach the requested documents in PDF format.
6. The result of the recruitment procedure will be sent to the candidates via email no later than **September 18, 2023**.
7. 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 necessary, selected candidates may be invited for an interview (in person or via online videoconference).

Additional questions could be sent by email to Maciej Radziński:
maciej.radzienski@imp.gda.pl