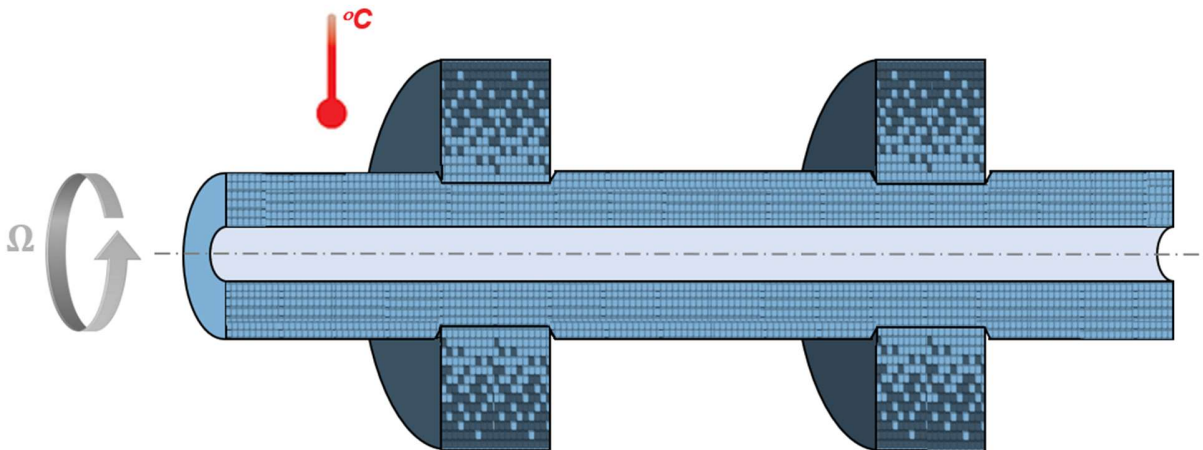


## Announcement Master's Thesis

# Analytical Model Development for the Dynamic Behavior of Functionally Graded Material Rotors

Functionally Graded Materials (FGMs) are advanced composites that exhibit gradual transitions in material properties in multiple directions, allowing for improved performance by strategically varying material composition across the structure. This gradual variation can enhance, e.g., the structural durability, thermal resistance, and vibration damping of rotors, making FGMs advantageous in high-performance applications such as aerospace, automotive, and industrial machinery. Despite these benefits, the material properties of FGMs may present unique challenges in accurately predicting their dynamic behavior. This study aims to develop an analytical model that captures the dynamic characteristics of FGM rotors. The model will facilitate a better understanding of FGM rotor behavior under various conditions, provide insights into optimizing design parameters to improve dynamic performance and analyze the instability of the rotors.



What is expected to be done in this study?

- A comprehensive literature review on FGM applications in rotor dynamics and the mathematical models developed for these applications,
- Development of an analytical material model for FGM rotor,
- Determination of suitable material properties to achieve optimal stability conditions for the rotor.

Your profile:

- Good knowledge of the basics of mechanics,
- Good programming skills in Matlab or having a high motivation to learn it,
- Independence, a high level of motivation and problem-solving skills.

If you are interested in working on this master's thesis with us and would like to join our team, please contact us by sending a short email.

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