L. Catherine Brinson
Duke University
Department of Mechanical Engineering and Materials Science
144 Hudson Hall, Durham NC 27708
cate.brinson@duke.edu
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Editor-in-Chief
International Journal of Mechanical Sciences

Dear Editor-in-Chief,

I am writing to submit our manuscript entitled "Uncertainty Quantification of Bandgaps in Acoustic Metamaterials with Stochastic Geometric Defects and Material Properties" for consideration for publication in the International Journal of Mechanical Sciences. This work is the culmination of extensive research into the application of uncertainty quantification techniques such as polynomial chaos expansion and spectral projection on capturing the uncertainties in the dispersion characteristics of acoustic metamaterials with minimal sampling and high accuracy, which has significant implications for practical design and manufacturing of these metamaterials.

Our research offers novel insights into how the impact of stochastic geometric defects and material property variations on the acoustic bandgaps of metamaterials can be captured efficiently and accurately. This study is the first of its kind to provide a framework for uncertainty quantification of the effects of both random material properties and geometric defects in high dimensional input spaces, offering a significant step forward in the design of more reliable and efficient acoustic metamaterials.

The findings presented in our manuscript align with the scope and interests of the International Journal of Mechanical Sciences. We believe that our manuscript will be of interest to the journal's readership, offering valuable insights into how uncertainty quantification techniques can be applied across a range of metamaterial design and manufacturing problems.

Please find attached the manuscript, along with any supplementary materials required for submission. We confirm that this manuscript has not been published elsewhere except a pre-print version on Axriv and is not under consideration by any other journal. All authors have approved the manuscript and agree with its submission to the International Journal of Mechanical Sciences.

Thank you for considering our work for publication. We look forward to the opportunity to contribute to the journal and are happy to make any necessary revisions based on reviewer feedback. Please do not hesitate to contact me should you require any further information or clarification.

Sincerely,

L. Catherine Brinson on behalf of the authors
Sharon C and Harold L Yoh III Distinguished Professor
Donald M Alstadt Chair, Department of Mechanical Engineering and Materials Science
Duke University