ABSTRACTS

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Advancements in the design and implementation of auxetic metamaterials

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Abstract: Auxetic metamaterials, characterized by their negative Poisson's ratio, represent a breakthrough in material science due to their unique mechanical properties. These materials can be engineered to possess characteristics not found in nature, enabling a wide array of applications in fields such as aerospace, automotive, medical devices, and protective equipment. This paper presents design and implementation of auxetic metamaterials, with a focus on their mechanical properties, production techniques, and both numerical and experimental validation. The work aims to highlight the potential of these materials in various industries and propose pathways for future research and development.