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LATTICE AND PERIODIC STRUCTURES

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ABSTRACT

Additive Manufacturing technologies are being increasingly applied in a wide range of industries. The manufacturing process is characterized by its high design freedom and enables an increased lightweight construction potential for instance in the aerospace industry, an extreme individualization potential in the medical industry and functional integration across all industries. Additive manufacturing is a key enabler for the fabrication and industrial application of open-celled and closed-celled cellular lattice structures (strut-based and surface-based) bearing significant potential for lightweight design with advantageous stiffness-weight-ratio and reduced build time. This session invites papers from all branches of research and application that deal with lattice structures in engineering applications. Papers that are welcome to this session deal with, but are not limited to, structural mechanics, design, simulation, modeling, manufacturing, optimization, experimental studies and process control for lattice structures. Simulations based on generative approach and AI-based tools are also welcome. Interdisciplinary contributions that deal with several of the mentioned fields are especially welcome. Case studies describing applications of lattice structures in engineering structures are also sought.

Keywords: Additive Manufacturing, experimental mechanics, fatigue, Finite element method, Homogenization, Lattice structures, lightweight design