

## **ASSESSING SHEAR STRAIN DISTRIBUTION IN WOOD UNDER IMPACT USING THE DIGITAL IMAGE CORRELATION METHOD**

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### **ABSTRACT**

*The demand for bio-based materials across various industries is growing fast, and it necessitates a comprehensive study of the high-rate loading effects on wood. While the 3-point impact bending test is commonly employed for evaluating material behavior, determining the strain distribution of the specimen remains challenging due to the fact that the impact takes place over a short period of time and that it requires specialized equipment and methods. Additionally, wood's heterogeneous nature and orthotropic structure make it difficult to identify the location of the highest shear strain. This research explores the potential of digital image correlation methods to determine the shear strain distribution in a wooden beam subjected to impact. The study determined the maximum shear strain in beech wood (*Fagus sylvatica* L.) and investigated the progressive pattern of shear strain during impact. The results demonstrate that, with appropriate equipment, the digital image correlation method can effectively determine the shear strain distribution during impact loading.*

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