CHARACTERISATION OF THE RADIAL VARIABILITY OF THE STIFFNESS PARAMETERS OF P. PINASTER BY THE VIRTUAL FIELDS METHOD

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ABSTRACT

In this work, the radial variability of longitudinal-radial stiffness parameters of maritime pine (P. pinaster) wood was investigated. The approach was based on the application of the virtual fields method (VFM) to a rectangular specimen loaded by the Iosipescu fixture. The displacement fields were measured by the grid method. The strain fields were then reconstructed from the measured displacement fields using a polynomial approximation scheme. Specimens with grain at 45º were tested. For this configuration, both the transverse (Q_{22}) and the shear (Q_{66}) stiffness parameters can be simultaneously identified. From the tested material, it was found that both these properties decrease from the centre to about the middle radius of the stem and increase afterwards at the outmost positions.