

## ON THE EVALUATION OF ELASTIC PROPERTIES OF P. PINASTER AT THE GROWTH RING SCALE

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### ABSTRACT

*In this work the identification of local elastic properties of maritime pine (*Pinus pinaster* Ait.) wood at the growth ring scale was investigated. Tensile tests through the radial direction were carried out in radial-tangential specimens. The strain fields over the gauge section were measured by digital image correlation. A balance between accuracy and spatial resolution was found out in order to assess the gradient strain fields generated by the heterogeneous cellular structure of the material. A segmentation technique based on image processing and analysis was implemented in order to split earlywood and latewood regions. The modulus of elasticity and Poisson's ratio of each earlywood and latewood layer were then determined. Effective mechanical properties were also evaluated and compared with reference to macroscopic properties and values from a mixture law. The results were found in good agreement.*