Hygromechanical behaviour of a wooden panel
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Introduction

Wooden panel paintings from cultural heritage are excellent cases of study for an engineer. They are witness of ancient times and practices, and may provide keys to the understanding of long term behaviour of wooden structures [1,2]. A particularity of these objects is the permanent cupping of the panel. It seems to appear whatever the orientation of the panel cutting (quatersawn or flatsawn) and the position of the paint layer.

Material and Method

Mechanical simulation : wetting

- Drastic wetting:
  - compressive strain on the painted face
  - Tension strain on the back face

Experimental results

- Vertical strain (E22) and shear (E12) are negligible compared to the horizontal strain (E11)

Mass transfer simulation: drying

References:

Wood and Science Technology, Maastricht,
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