

Wood Joint Design Toward Structural Robustness

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Abstract. The joints play a fundamental role in providing wooden structures with the feature of robustness. Indeed, under dynamic loading, excessive stiffness of the joints prevents the structure from dissipating energy, thus possibly initiating a fast progressive failure. On the other hand, the joints must be sufficiently resistant to avoid local failures of the structural elements, below their expected performance level. The idea is to design a wooden joint able to dissipate energy during vibrations and, at the same time, to fulfil its connectivity function.

For this purpose, a full-size joint prototype, connecting scaled structural members made of wood panels, was constructed to undergo shaking table tests. The elaboration of a partial set of the collected measurements led to the results presented in (Casciati *et al.*, 2005). The remaining dataset is used, in the present analyses, to emphasize the robustness aspect related to the proposed joint design.

References

Casciati F, Casciati S., and Domaneschi M. (2005). “Wood-Panel Smart Joints for Dynamic Excitations”. *Proc. Probabilistic Models In Timber Engineering (COST E24)*. September 8-9, Arcachon, France, pp. 273-281.