

## SEISMIC TESTING OF ADJACENT INTERACTING MASONRY STRUCTURES

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**Abstract** *In many historical centres in Europe, stone masonry is part of building aggregates, which developed when the layout of the city or the village was densified. In these aggregates, adjacent buildings can share structural walls to support floors and roofs, with an older and a newer unit often connected by dry joints. Observations after for example the recent Central Italy earthquakes showed that dry joints between the building units were often the first elements to be damaged, leading to the pounding between the building units and the complicated interaction at floor and roof beam supports.*

*The analysis of such building aggregates is further complicated by the lack of guidelines, as the advances were impeded by the scarce experimental data. Therefore, the objective of the project AIMS (Seismic Testing of Adjacent Interacting Masonry Structures), included in the H2020 project SERA, was to provide such data by testing an aggregate of two buildings under two horizontal components of dynamic excitation. The test unit was built at half-scale, with a two-storey building and a one-storey building. The buildings shared one common wall, while the façade walls were connected by dry joints. The floors were at different heights and had different beam orientations. The shake table test was conducted at the LNEC seismic testing facility, and a blind prediction competition was organized.*

*Extensive instrumentation, including accelerometers, displacement transducers and optical measurement systems, provided detailed information on the building aggregate response. Results are reported and compared with the blind prediction submissions. The reported data includes force-displacement responses, damage maps, interstorey drifts, out-of-plane displacements, and the global behaviour in relation to the interface separation.*