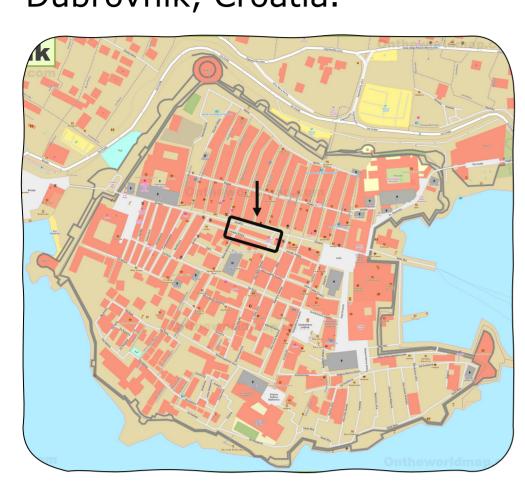
Nemanja Krtinić | Petra Prašnikar | Daniel Tomikj | Jovan Trajchevski | Chiara Patanè | Michele Milesi | Luca Danesi

Lars Abrahamczyk | Aanis Uzair

Nonlinear Modelling and Analysis of Unreinforced Masonry Structures

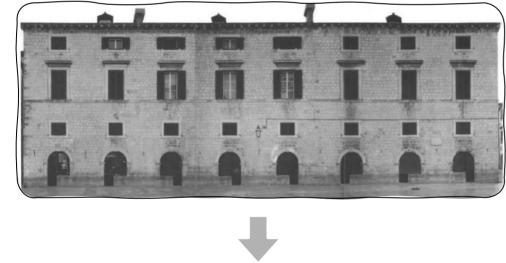
1. Case Study

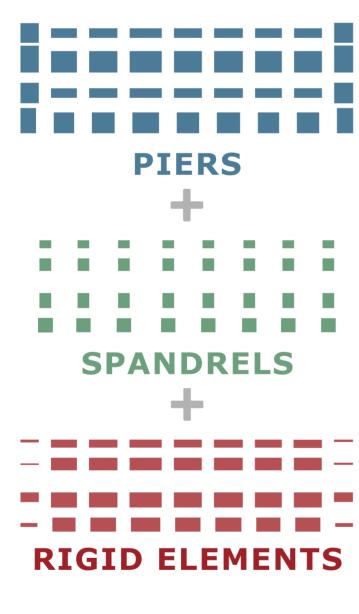
The case study is a historical stone masonry building located in the old city of Dubrovnik, Croatia.



2. Equivalent Frame Model

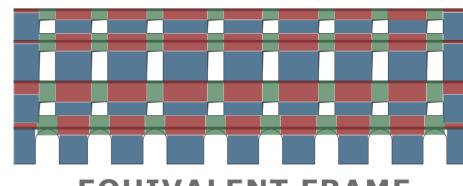
In the field of structural element models (macro), the "Equivalent Frame" ones are the most widely diffused. They consider the walls as an idealised frame in which deformable elements (where the non-linear response is concentrated) are connected by rigid nodes (parts of the wall which are not usually subjected to damages).





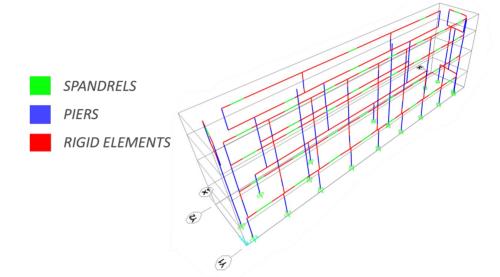
2.1. Discretization

Characterized by effective pier height (at 30° angle).

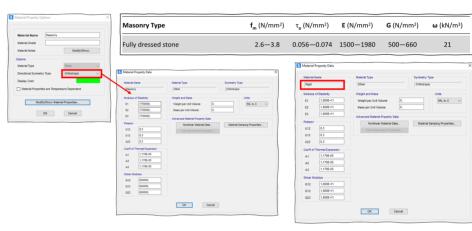


EQUIVALENT FRAME

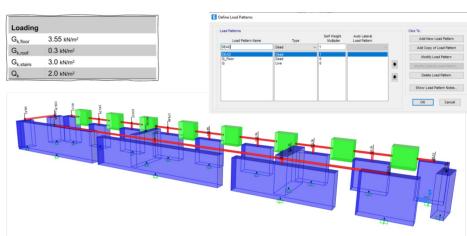
2.2. Structural Model



2.3. Material Properties

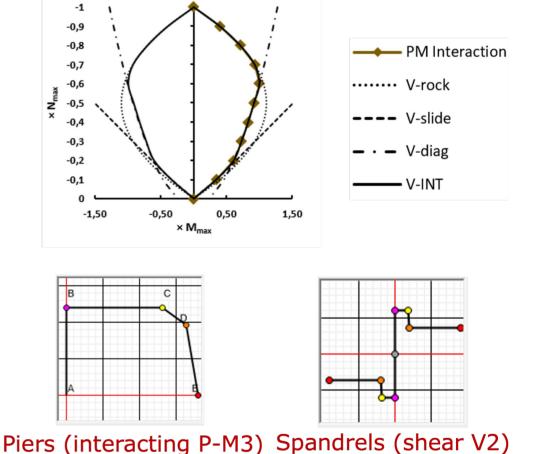


2.4. Loading

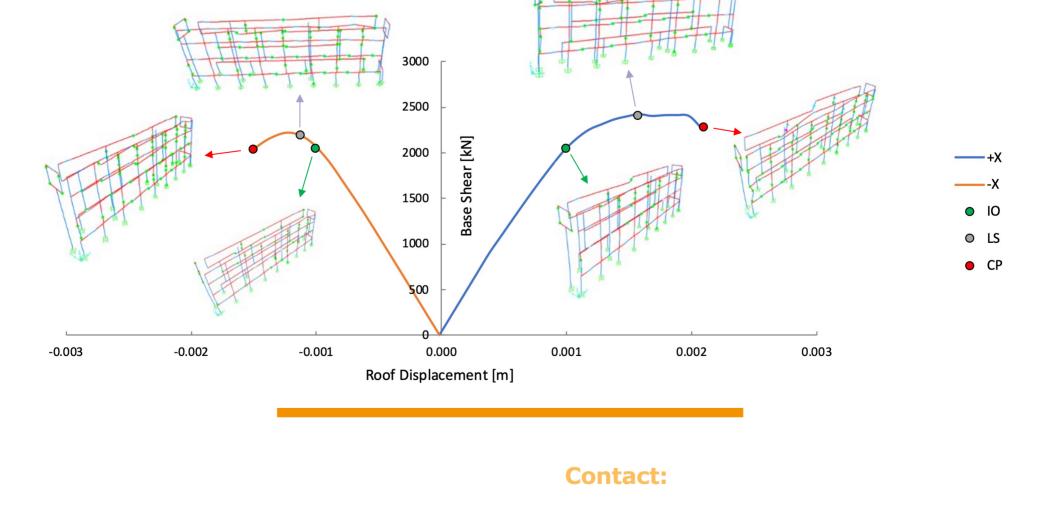


2.5. Nonlinear Behaviour

- Elastic perfectly plastic constitutive law(s).
- Consideration of axial force-moment interaction.
 Rocking, diagonal cracking
 - and bed-joint sliding.



3. Results (Capacity Curve)



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