

Seismic assessment of irregular masonry macro-elements through a nonlinear framed model: a case study

Torres, Wilson

Almazán, José Luis

Sandoval, Cristián

Boroschek, Rubén

© 2019, Springer Nature B.V. The seismic assessment of heritage structures with complex architecture, such as masonry churches, remains a challenging task. In most cases, an accurate and reliable assessment of this type of constructions requires computationally expensive nonlinear analyses. Due to this, simplified models, with an optimal compromise between accuracy and computational burden, continue to be necessary. This paper focuses on assessing the performance of an equivalent framed model, built from beam-column elements with concentrated plasticity at the ends, to simulate the in-plane seismic response of irregular masonry macro-elements. The case under study is the nave macro-element of the Metropolitan Cathedral of Santiago, Chile. The performance of the proposed model is evaluated by comparing its results with the results of a previously generated model based on the rigid body spring model, considering both static and dynamic analysis. The proposed model, which is generated in t