



## **Tailor-made earthquake early warning for buildings**

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Earthquake early warning systems are considered an effective and viable tool for the seismic risk reduction in cities. In this work we present an innovative on-site earthquake early warning procedure for buildings, which is based on the use of early P-waves recordings collected by an accelerometer at the base level and one at the top level of a structure. The early earthquake signals are exploited to obtain a first estimation of both the incoming event size, as well as of the structure impulse response function. Then, these latter pieces of information are in turn convolved to obtain a real-time estimation of the acceleration and response spectra at the top level of the structure, which could be profitably used to provide early warning alarms, or for example, to modify the characteristics of semi-active seismic security devices before the larger shaking of the incoming event hits the structure. The earthquake early procedure here proposed is tested using the recordings of three aftershocks of the L'Aquila sequence 2009 that have been collected at the Navelli's city hall.