



Towards Coupling of Macroseismic Intensity with Structural Damage Indicators

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Knowledge on basic data of ground motion acceleration time histories during earthquakes is essential to understanding the earthquake resistant behaviour of structures. Peak and integral ground motion parameters such as peak ground motion values (acceleration, velocity and displacement), measures of the frequency content of ground motion, duration of strong shaking and various intensity measures play important roles in seismic evaluation of existing facilities and design of new systems. Macroseismic intensity is an earthquake measure related to seismic hazard and seismic risk description. Having detailed ideas on the correlations between the earthquake damage potential and macroseismic intensity is an important issue in engineering seismology and earthquake engineering.

Reliable earthquake hazard estimation is the major prerequisite to successful disaster risk management. The usage of advanced earthquake engineering approaches for structural response modelling is essential for reliable evaluation of the accumulated damages in the existing buildings and structures due to the history of seismic actions, occurred during their lifetime. Full nonlinear analysis taking into account single event or series of earthquakes and the large set of elaborated damage indices are suitable contemporary tools to cope with this responsible task.

This paper presents some results on the correlation between observational damage states, ground motion parameters and selected analytical damage indices. Damage indices are computed on the base of nonlinear time history analysis of test reinforced structure, characterising the building stock of the Mediterranean region designed according the earthquake resistant requirements in mid XX-th century.