The UCLA
EERI and PEER Seminar Series
Presents

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Boelter Hall 4275
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Campbell-Bozorgnia Next Generation Attenuation (NGA) relations for PGA, PGV and spectral acceleration: a progress report

The authors are one of five teams developing empirical ground motion (attenuation) relations for active shallow crustal regions as part of the PEER Next Generation Attenuation (NGA) Project. Each Developer Team was provided with a common database of worldwide strong-motion recordings and supporting metadata, but was given the freedom to use separate data selection criteria, parameters, functional forms, and statistical regression methods. We chose to exclude aftershocks and poorly recorded earthquakes using criteria that required smaller events to have a larger number of recordings than larger events. One of the biggest challenges was to develop a functional form that accounted for the apparent change in magnitude scaling around *M* 6.5–7.0 as suggested from several recent large earthquakes in Alaska, California, Turkey, and Taiwan. After extensive exploratory analysis, we selected a trilinear rather than the more traditional quadratic functional form to model the magnitude-scaling characteristics of ground motion. Parameters included in the model are moment magnitude, closest distance to rupture and to the surface projection of rupture, buried reverse faulting, normal faulting, sediment depth (both shallow and basin effects), hanging-wall effects, average shear-wave velocity in the top 30 m, and nonlinear soil behavior as a function of shear-wave velocity and rock PGA.

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