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Hybrid finite element-spectral method for coseismic and postseismic modelling

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We have dealt with the static coseismic response of elastic Earth's models as well as with postseismic response of viscoelastic models assuming a given slip function along a fault. We have started from the weak formulation of the problem, which is employed to get the Galerkin approximation in our numerical approach. The key point of the approach consists in the choice of the basis functions, which are constructed by a combination of 2-D finite elements in a vertical plane perpendicular to the fault together with the spectral decomposition in the remaining direction. Applicability of the method is demonstrated, e.g., on Lefkada, Greece, earthquake in 2003, with special attention paid to distribution of the Coulomb stress in the area. We have been also working on the modelling of the coseismic and postseismic response to Sumatra, December 26, 2004 event.