Title: Ray-based Born approximation
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Abstract:
One of the aims of this thesis was coding of program *grdborn.for* for computing the 2D and 3D ray-based Born approximation of the first order in an inhomogenous isotropic medium without attenuation. The computation of 3D amplitudes using the 2D Born approximation is based on the correction term, which is derived. The program is further used in computing the Born approximation in various models. We test its performance in three simple models. We study the effect of the discretization, the spurious waves introduced by the finite size of the grid etc. In the next step, we focus on the computations in more complicated models. We compute the Born seismograms in 2D heterogenous models. We study the diffracted waves, the effects of caustics etc.
Keywords: Born approximation, ray theory, velocity model, perturbation