

CHARACTERISTIC CURVES IN MODELING OF THE EARTH  
CRUST AND UPPER MANTLE

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Nearly all applied in geophysics and seismology mathematical models of the Earth crust and upper mantle are based on representation of our planet as non-elastic solid body. The wave propagation in such body is described by a system  $S$  of three strongly coupled linear hyperbolic equations. Following the standard geophysical approach, Earth structure is locally modeled as a half space with jump discontinuities, and therefore the coefficients in  $S$  are piece-wise constant functions. In this talk is considered one geometrical approach to the solutions of system  $S$ . It is based on the geometric properties of characteristic curves of  $S$  and Geometrical optics is used to compute reflection and refraction of the characteristics at the discontinuities. This approach allows reasonable 3-D modeling of the Earth structure and implementing of algorithms for 3-D inverse problem in geophysics