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**Signal-based ray tracing modeling in complex tectonics**

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The objective of this talk is to present a novel method which can perform the fast computation of the times of arrival of seismic waves which propagate between a source and an array of receivers in a stratified medium. This method combines signal processing concepts for the approximation of interfaces and wavefronts, and ray theory for the propagation of wavefronts. The main idea is to put in adequation the computations with the the precision and the resolution of the source signal in order to avoid unnecessary computational effort. This new approach leads to the redefinition and simplification of the model through which waves propagate. The modifications are governed by the spectral characteristics of the source signal. All rays are computed without any omission at a much lower cost in computing time than classical methods. In addition, we will show how to include surface waves such as head waves within the proposed method.