

AN OPTIMIZATION METHOD ON JOINT INVERSION OF DIFFERENT TYPES OF SEISMIC DATA

Anibal Sosa¹, Leticia Velazquez¹, Aaron Velasco², Miguel Argaez¹, Rodrigo Romero³, Lennox Thompson²

¹Department of Mathematical Sciences, ²Department of Geological Sciences, ³Department of Computer Science, University of Texas at El Paso, El Paso, TX

usosaaguirre@miners.utep.edu

Abstract

In geophysical applications, the goal of a joint inversion technique is to characterize the earth structure by using different experimental data sets from the same portion of the propagating medium (consistency). We expect that using joint data may improve the numerical results by using the constraints of each independent data set (complementarity). We are conducting research with state-of-the-art optimization techniques in a joint inversion code that incorporates a new regularization approach for predicting the subsurface layer velocities. In this talk, we present the motivation of the joint inversion, a basic study of the optimization methods being compared, and a numerical experimentation using synthetic data using teleseismic P-wave receiver functions and surface wave dispersion velocities