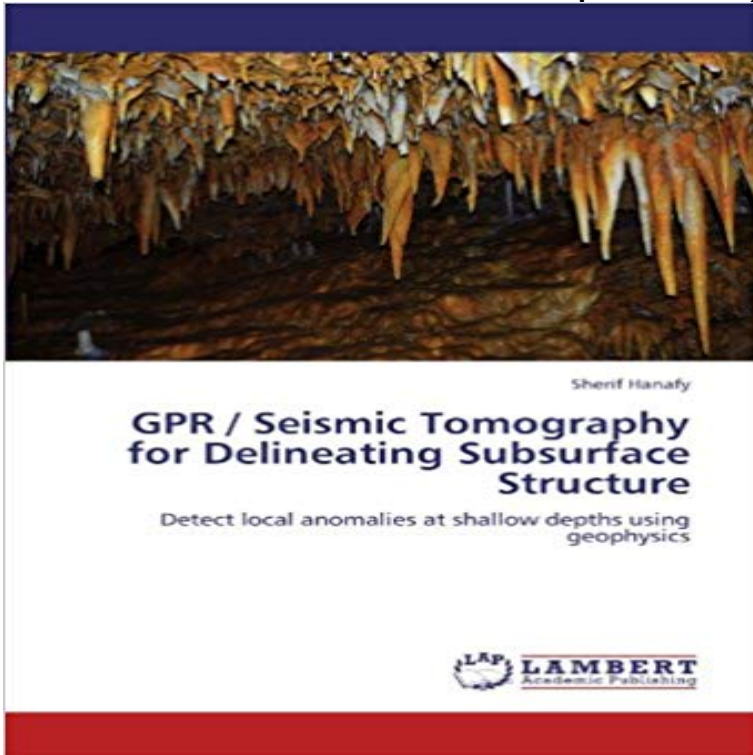


## GPR / Seismic Tomography for Delineating Subsurface Structure: Detect local anomalies at shallow depths using geophysics



The aim of the present work is to develop an approach for detecting and mapping different types of subsurface anomalous zones using tomographic processing techniques. Tomography is applied to process seismic refraction and Ground Penetrating Radar (GPR) data. We developed a new tomography technique depending on acquiring the GPR or seismic data from surface survey, where both sources and receivers are located on the earth's surface. Three synthetic seismic models and two sets of field data are discussed to test the proposed seismic refraction tomography technique. Due to the similarities between GPR and seismic data, the adopted tomography technique is applied to GPR data. Three GPR tomography laboratory experiments are acquired in the laboratory of Kiel University, Germany. The inversion of GPR data using the adopted technique give satisfactory results on the lateral extension of the anomalies as well as GPR velocity. One GPR tomography field test is acquired in the botanic garden of Kiel University, Kiel, Germany. In this data the root system of a tree and zone of high water content, due to previous excavation processes could be marked on the inverted tomogram map.

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