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Ray-based Tomography: An application for linear algebra.

Ray-based tomography is a way to investigate the body (CT scans), the earth (seismic data) and other hidden structures. Rays are passed through an object and travel time recorded. Using discretization, a system of equations is then solved for the “slowness” factors of the regions of the structure. In this talk, I will explain how the systems of equations are developed and give examples of both forward and inverse problems for a linear algebra course, with emphasis on underdetermined systems. (Received September 21, 2010)