1001-53-71 **Plamen Stefanov*** (`stefanov@math.purdue.edu`), Department of Mathematics, Purdue University, West Lafayette, IN 47907, and **Gunther Uhlmann**, Department of Mathematics, University of Washington, Seattle, WA. *Integral geometry of tensor fields and the boundary rigidity problem.*

We study the boundary rigidity problem for Riemannian manifolds with boundary: can we recover the manifold from the distance function known for each pair of boundary points? We also study its linearization: recovery of a tensor field from integrals along geodesics. We prove uniqueness and Hölder stability for generic simple metrics, including the real analytic ones. Applications to the inverse problem for the hyperbolic DN map are also discussed. (Received August 07, 2004)