

Meeting: 1003, Atlanta, Georgia, SS 4A, AMS-SIAM Special Session on Theoretical and Computational Aspects of Inverse Problems, I

1003-58-1094 **Eduardo E Chappa*** (chappa@math.tamu.edu), Texas A&M University, Department of Mathematics, 3368 TAMU, College Station, TX 77843-3368. *On the characterization of the kernel of the geodesic X-Ray transforms of tensor fields.*

Let $\bar{\Omega}$ be a compact manifold with boundary. We consider covariant symmetric tensor fields of order two that belong to a Sobolev space $H^k(\bar{\Omega})$, $k \geq 1$. We prove, under the assumption that the metric is simple, that solenoidal tensor fields that belong to the kernel of the geodesic X-Ray transform, are smooth up to the boundary. As a corollary we obtain that they form a finite dimensional set in H^k . (Received October 03, 2004)