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Craig J. Sutton* (craig.j.sutton@dartmouth.edu), Dartmouth College, Department of Mathematics, Hanover, NH 03755. *Hearing the moments of inertia of a rigid body.*

It is an interesting question to determine whether certain special classes of metrics can be distinguished by the spectrum of the Laplacian. For example, one might wonder whether symmetric spaces of the compact type (i.e., symmetric spaces of nonnegative curvature without a euclidean factor) can be distinguished from all other manifolds via the spectrum. In this talk we will discuss an approach to this problem and then apply it to a special case which has a physical interpretation. (Received February 15, 2011)