Meeting: 1005, Newark, Delaware, SS 12A, Special Session on Geometric Analysis

1005-53-75 **Fengbo Hang*** (fhang@math.msu.edu), Department of Mathematics, Michigan State University, East Lansing, MI 48824, and **Xiaodong Wang** (xwang@math.msu.edu), Department of Mathematics, Michigan State University, East Lansing, MI 48824. *Rigidity and non-rigidity results on the sphere.*

On a smooth Riemannian manifold of dimension at least three, it is known that one may always locally modify the metric so that the scalar curvature becomes smaller. In another direction, if certain differential operator has trivial kernel, it is known that one may push the scalar curvature up by a local modification of the metric. Nontrivial kernels do exist for the standard metric on R^n or S^n. By the positive mass theorem, R^n is rigid in the sense that one may not push the scalar curvature up locally. Similar problems remain open for S^n. We will discuss some special cases of such open problems. (Received January 27, 2005)