1070-35-196 **Zheng-Chao Han*** (zchan@math.rutgers.edu), Department of Mathematics, Rutgers University, Piscataway, NJ 08854, and **YanYan Li** (yyli@math.rutgers.edu), Department of Mathematics, Rutgers University, Piscataway, NJ 08854. On the local solvability of the Nirenberg problem on S².

We present some results on the local solvability of the Nirenberg problem on \mathbb{S}^2 . More precisely, an $L^2(\mathbb{S}^2)$ function near 1 is the Gauss curvature of an $H^2(\mathbb{S}^2)$ metric on the round sphere \mathbb{S}^2 , pointwise conformal to the standard round metric on \mathbb{S}^2 , provided its $L^2(\mathbb{S}^2)$ projection into the the space of spherical harmonics of degree 2 satisfy a matrix invertibility condition, and the ratio of the $L^2(\mathbb{S}^2)$ norms of its $L^2(\mathbb{S}^2)$ projections into the the space of spherical harmonics of degree 1 vs the space of spherical harmonics of degrees other than 1 is sufficiently small. (Received February 11, 2011)