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**Pengzi Miao\*** ([pengzim@math.miami.edu](mailto:pengzim@math.miami.edu)), Department of Mathematics, University of Miami, 1365 Memorial Drive, Ungar 515, Coral Gables, FL 33146. *Effect of minimal surfaces on boundary behavior of manifolds with nonnegative scalar curvature.*

In 2002, Shi and Tam proved a remarkable theorem concerning the boundary behavior of compact manifolds with nonnegative scalar curvature. Their theorem states that if  $(\Omega^n, g)$  is a compact manifold with nonnegative scalar curvature with boundary  $\Sigma$ , and if  $\Sigma$  has positive mean curvature  $H$  and  $\Sigma$  can be isometrically embedded in  $\mathbb{R}^n$  as a strictly convex hypersurface, then

$$\int_{\Sigma} H d\sigma \leq \int_{\Sigma} H_0 d\sigma,$$

where  $H_0$  is the mean curvature of the isometric embedding of  $\Sigma$  in  $\mathbb{R}^n$ . In this talk, I will discuss a recent work with Siyuan Lu, in which we give a generalization of Shi-Tam's theorem to incorporate the effect of apparent horizon on the geometry of  $\Sigma$ . (Received January 10, 2017)