Hang Chen and Guofang Wei* (wei@math.ucsb.edu), Department of Math, UCSB, Santa Barbara, CA 93106. Rigidity of minimal submanifolds in space forms.

We prove the rigidity for an $n(\geq 4)$-dimensional submanifolds $M^n$ with parallel mean curvature in the space form $\mathbb{M}^{n+p}_c$ when the integral Ricci curvature of $M$ has some bound. Namely if $c + H^2 > 0$ and $\|\text{Ric}_x\|_{n/2} < \epsilon(n, c, \lambda, H)$ for $\lambda$ satisfying $\frac{n-2}{n-1}(c + H^2) < \lambda \leq c + H^2$, then $M$ is the totally umbilical sphere $\mathbb{S}^n(\frac{1}{\sqrt{c+H^2}})$. Here $H$ is the norm of the parallel mean curvature of $M$, and $\epsilon(n, c, \lambda, H)$ is a positive constant depending only on $n, c, \lambda$ and $H$. This extends some of the earlier work of Xu-Gu from pointwise Ricci curvature lower bound to integral Ricci curvature lower bound. This is a joint work with Hang Chen. (Received January 16, 2019)