1135-57-1539 **Shijie Gu*** (shijiegu@uwm.edu). *Compactifications of manifolds with boundary.*

In 1976, Chapman-Siebenmann provided criteria for a Hilbert cube manifold X to admit a $\mathcal{Z}$-compactification. However, the question of (whether) the extension of their characterization can be extended to manifolds still remains open: If M^n is a finite dimensional manifold and $M^n \times \mathcal{Q}$ is $\mathcal{Z}$-compactifiable, is M^n itself $\mathcal{Z}$-compactifiable? In this talk, the complete characterizations of completable manifolds and pseudo-collarable manifolds will be given, respectively. As two applications, the former one implies a best possible "stabilization theorem": $M^n \times \mathcal{Q}$ $(n \geq 4)$ is $\mathcal{Z}$-compactifiable iff $M^n \times [0,1]$ is $\mathcal{Z}$-compactifiable. Applying the latter characterization together with knot theory and group theory, we prove that there exist $\mathcal{Z}$-compactifiable manifolds with boundary which are not pseudo-collarable. This can be viewed as a counterexample of a special case of a question asked by Guilbault-Tinsley [2003]: Can a $\mathcal{Z}$-compactifiable open manifold fail to be pseudo-collarable? (Received September 23, 2017)