1147-58-422   **Xiaoman Chen**, **Jinmin Wang**, **Zhizhang Xie*** (`xie@math.tamu.edu`) and **Guoliang Yu**.
Delocalized eta invariants, cyclic cohomology and higher rho invariants.

In this talk, I will talk about my recent joint work with X. Chen, J. Wang and G. Yu on Higson-Roe's higher rho invariant and Lott's higher eta invariant. We show that the convergence of Lott's delocalized eta invariant holds for all operators with a spectral gap at zero. Furthermore, we generalize this convergence result to all higher degree delocalized cyclic cocycles with at most exponential growth. We then compute delocalized Connes-Chern characters of C^*-algebraic secondary invariants for word hyperbolic groups, by constructing an explicit pairing between delocalized cyclic cocycles of group algebras and Higson-Roe's higher rho invariants. As an application, we prove a delocalized higher Atiyah-Patodi-Singer theorem for manifolds with boundary. (Received January 23, 2019)