Helton-Howe Trace, Connes-Chern Character, and Quantization

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Abstract

In the early 70s, Helton and Howe proved a beautiful formula for the trace of commutators of Toeplitz operators. In the 80s, Connes greatly generalized the Helton-Howe trace formula using cyclic cohomology. The Connes-Chern character contains the Helton-Howe trace as the top degree component. In this talk, we will study the Connes-Chern character for the Toeplitz extension from the viewpoint of quantization. As an outcome, we will establish the Helton-Howe trace formula for Toeplitz operators with C^2-symbols for all weighted Bergman spaces. This talk is based on joint work with Yi Wang and Dechao Zheng.