

G -equivariant Szegő kernel asymptotics on CR manifolds

Rung-Tzung Huang

National Central University
E-mail: rthuang@math.ncu.edu.tw

Abstract

Let $(X, T^{1,0}X)$ be a compact connected orientable CR manifold of dimension $2n + 1$ with non-degenerate Levi curvature. Assume that X admits a connected compact Lie group action G . Under certain natural assumptions about the group action G , we show that the G -equivariant Szegő kernel for $(0, q)$ forms is a complex Fourier integral operator, smoothing away $\mu^{-1}(0)$ and there is a precise description of the singularity near $\mu^{-1}(0)$, where μ denotes the CR moment map. We apply our result to the case when X admits a transversal CR S^1 action and deduce an asymptotic expansion for the m -th Fourier component of the G -equivariant Szegő kernel for $(0, q)$ forms as $m \rightarrow +\infty$. As an application of the G -invariant case, we show that if m large enough, quantization commutes with reduction. When X is strongly pseudoconvex with a transversal CR S^1 action, we compute the coefficients of the first few terms of the asymptotic expansions of the G -equivariant Szegő kernel. This talk is based on joint works with Chin-Yu Hsiao and Guokuan Shao.