Problems related to Eigenvalues of sub-Laplacian on pseudo-hermitian manifolds

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Abstract

Let (M, θ) be $(2n+1)$-dimensional strictly pseudoconvex pseudo-hermitian manifold. Let Δ_{sb} be sub-Laplacian or real part of Kohn's Laplacian acting on functions on M with repect to the contact form θ. The talk will contain three parts:

i) Understanding Riemmann zeta function associated to the eigenvalues of the sub-Laplacian;

ii) The best lower bound for the first positive eigenvalue of sub-Laplacian in terms of the pseudo (or Webster's) Ricci curvature and torsion;

iii) Characterization for strictly pseudoconvex domains to be the ball through pseudo (or Webster's) scalar curvature with θ given by the potential function for Fefferman equation or for Kahler-Einstein metric.