Global theory of subelliptic pseudo-differential operators and Fourier integral operators on compact Lie groups

Duván Cardona

Ghent University
Belgium
duvanc306@gmail.com

Joint work with: Michael Ruzhansky

In this talk we will present the general aspects of the theory of global subelliptic pseudo-differential operators on compact Lie groups, developed recently by the author and M. Ruzhansky. More precisely, given a compact Lie group G, and the sub-Laplacian $\mathcal{L}$ associated to a system of vector fields $X = \{X_1, \cdots, X_k\}$ satisfying the Hörmander condition, we introduce a (subelliptic) pseudo-differential calculus associated to $\mathcal{L}$, based on the matrix-valued quantisation process developed by M. Ruzhansky and V. Turunen in their previous works. Singular kernels for this calculus, estimates of L^p-L^p, H^1-L^1, and L^∞-BMO type, Calderón-Vaillancourt theorem, heat traces, regularisation of traces, Dixmier traces, global functional calculus, subelliptic Hulanicki theorem, subelliptic Gårding inequalities, the global solvability of subelliptic pseudo-differential problems and the L^2-boundedness of global Fourier integral operators on compact Lie groups, are the topics that we will discuss.