

SPECTRUM AND ABNORMALS IN SUB-RIEMANNIAN GEOMETRY: THE 4D QUASI-CONTACT CASE

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We prove several relations between spectrum and dynamics including wave trace expansion, sharp/improved Weyl laws, propagation of singularities and quantum ergodicity for the sub-Riemannian (sR) Laplacian in the four dimensional quasi-contact case. A key role in all results is played by the presence of abnormal geodesics and represents the first such appearance of these in sub-Riemannian spectral geometry.