

**Workshop on Mathematical Physics and Pseudo-Differential Operators –
Celebrating Jean Nourrigat's 80th birthday**

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Spin-Orbit Interactions, Coherent States and Large Spin

Friday, November 7, 2025 11:10 AM (45 minutes)

The aim of the talk is to explain some results about perturbations of scalar Schrödinger Hamiltonians by spin matrices in irreducible representations of $SU(2)$ in large dimension. In the first part we consider propagation of coherent states (for orbit and spin) in the semi-classical regime for the time dependent Schrödinger equation. In the second part we revisit an old result obtained by Hepp and Lieb (Annals of Physics, 1973) concerning the Dicke model and the super-radiance phenomenon for the interaction light-matter.

Presenter: ROBERT, Didier (Nantes Université)