

Sujet de Thèse

- **Titre** : Spectrum of integrable magnetic Hamiltonians in the semiclassical limit
- **Unité de recherche** : IRMAR, UMR-6625
- **Thème** : Mathematics, analysis, mathematical physics
- **Mots clefs** : spectral theory, integrable systems, magnetic field, topological invariants
- **Les noms, prénoms et courriel du directeur de thèse**
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Objectif de la thèse

The student will investigate the structure of the joint spectrum of simple molecules in the presence of a strong magnetic field with symmetries. The starting point will be to classify the integrable cases of magnetic Laplacians, and determine whether topological invariants like quantum monodromy can be present. Further directions towards tunnel effects, semiclassical dynamics, and numerical methods are possible.

The student will be able to manipulate several simple models of integrable magnetic Laplacian and compute numerically their joint spectra. Precise asymptotic expansions for eigenvalues are expected, rigorously justified with the help of quantum (microlocal) normal forms.