

**SEMICLASSICAL TRACE FORMULA AND SPECTRAL SHIFT
FUNCTION FOR SCHRÖDINGER OPERATORS WITH
MATRIX-VALUED POTENTIALS**

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ABSTRACT. In this talk, I will present some recent results on the spectral properties of semiclassical systems of pseudodifferential operators. We developed a stationary approach for the study of the Spectral Shift Function for a pair of self-adjoint semiclassical Schrödinger operators with matrix-valued potentials. A Weyl-type semiclassical asymptotics with sharp remainder estimate for the SSF is obtained, and under the existence condition of a scalar escape function, a full asymptotic expansion for its derivatives is proved. This last result is a generalization of the result of Robert-Tamura (1984) proved in the scalar case near non-trapping energies. Our results are consequences of semiclassical trace formulas for general microhyperbolic systems possibly with eigenvalues crossings.

This talk is based on a recent work with Mouez Dimassi (University of Bordeaux, France) and Setsuro Fujiie (Ritsumeikan University, Japan).