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Semi-classical Green kernel asymptotics for the Dirac operator

We consider a semi-classical Dirac operator in arbitrary spatial dimensions with a smooth potential whose partial derivatives of any order are bounded by suitable constants. We prove that the distribution kernel of the inverse operator evaluated at two distinct points fulfilling a certain hypothesis can be represented as the product of an exponentially decaying factor involving an associated Agmon distance and some amplitude admitting a complete asymptotic expansion in powers of the semi-classical parameter. Moreover, we find an explicit formula for the leading term in that expansion.

The talk is based on joint work with Claudia Warnt