**Spectral shift function for the magnetic Schrödinger operators**

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**Abstract.**

The spectral shift function (SSF), which is originally introduced by the physicist I. M. Lifshits, is a quantity which indicates the difference between the free operator $H_0$ and the perturbed operator $H = H_0 + V$. Especially, the case $H_0$ is the free Laplacian on $\mathbb{R}^d$ and $V$ is a short range scalar potential is most studied, and the results are applied to the scattering theory, the theory of resonances, and so on.

In 2008, H. Tamura develops the semiclassical analysis of SSF in the case $H_0$ is the free Laplacian on $\mathbb{R}^2$ and $H$ is the magnetic Schrödinger operator corresponding to a compactly supported magnetic field, including the case the magnetic field is a sum of several pointlike magnetic fields (Aharonov–Bohm magnetic fields). In this talk, we review Tamura's results and introduce some related topics; (i) stochastic representation for the Laplace transform of SSF (J. L. Borg's result), (ii) the explicit formula of SSF for the two-point qunatized pointlike magnetic field. We will show the latter formula mathces with Tamura's result by numerical calculaton. The formula also gives the asymptotics of SSF in the limit two points are close to each other.