

Wegner estimate for Gaussian random magnetic fields

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Wegner estimate is an estimate showing the sensitivity of eigenvalues with respect to random elements of the operator. This estimate had been given mainly for operators depending on the random elements monotonously, and the conditions had been limited severely for operators without the monotonicity as the Schrodinger operator with a random magnetic field. Recently Erdős and Hasler gave a Wegner estimate for the random magnetic Schrodinger operator by using a nondegeneracy of the eigenvalues instead of the monotonicity. The vantage point of their theory is that the conditions are posed only on the random magnetic field. They assume that the random magnetic field has a special form with a strictly positivity.

In this talk, we extend their estimate to a Gaussian random magnetic field, which takes any values. To extend the nondegeneracy of the eigenvalues, we apply the method of the Malliavin calculus.

As an application we prove the Anderson localization by the random magnetic field.