Seminar/Talk

Lower bound for the effective mass of the Polaron

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Host: Robert Seiringer

The Fröhlich Polaron describes the slow movement of an electron in a polar crystal. A long open problem is the asymptotics of the effective mass of the electron as the coupling parameter α tends to infinity. While it has been conjectured by Landau and Pekar that the effective mass grows with the fourth power of the coupling parameter, so far it had only been shown by Lieb and Seiringer that the effective mass diverges in the strong coupling limit. I will present recent work where we give a first quantitative lower bound on the effective mass of the Polaron and show that the divergence is at least as fast as $\alpha^{2/5}$ times some constant. For the proof we apply the representation of the path measure of the Polaron in terms of random collections of intervals that has recently been introduced by Mukherjee and Varadhan. Joint work with Volker Betz.

Thursday, June 2, 2022 04:15pm - 05:15pm

Mondi 2 (I01.01.008), Central Building

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