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**Strong quantum interference in strongly disordered bosonic insulators** SERGEY SYZРАНOV, Institut fuer Theorie der Kondensierten Materie, Karlsruhe Institute of Technology, 76131 Karlsruhe, Germany, ANDREAS MOOR, KONSTANTIN EFETOV, Theoretische Physik III, Ruhr-Universitaet Bochum, 44780 Bochum, Germany — We study the model of variable-range hopping of bosons in an array of sites with short-range interactions and a large characteristic coordination number, which describes conduction in a broad class of insulators, such as strongly disordered superconductive films, systems close to the Anderson transition, Josephson networks, etc. Large coordination number leads to strong quantum interference phenomena yet allows for their analytical study. We develop a functional renormalization group scheme that repeatedly eliminates high-energy sites properly renormalizing the tunneling between the low-energy ones. Using this approach we determine the temperature and magnetic field dependence of the hopping conductivity and find a large positive magnetoresistance. With increasing magnetic field the behaviour of the conductivity crosses over from the Mott's law to an activation behaviour with the activation gap proportional to the magnetic field.

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