

Abstract Submitted
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Magnetoresistance of granular superconductors at low temperatures IGOR BELOBORODOV, Argonne National Laboratory — I will discuss the resistivity of granular superconductors in the presence of magnetic field at low temperatures. It is assumed that the tunneling between grains is large such that all conventional effects of localization can be neglected. I will show that at low temperatures the superconducting fluctuations reduce the one-particle density of states but do not contribute to transport. As a result the resistivity in the transition region exceeds the normal state value leading to a negative magnetoresistance. I will also analyze the possibility of the formation of a magnetic field induced insulating state in a two dimensional granular superconductors and show that such a state appears in a model with spatial variations of the single grain critical magnetic field. This model describes realistic granular samples with the dispersion in grain sizes and explains a mechanism leading to a giant peak in the magnetoresistance.

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