

Abstract Submitted  
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**Transport Properties of Granular Metals** IGOR BELOBORODOV, Argonne National Laboratory, KONSTANTIN EFETOV, Ruhr University, Bochum, Germany, ANDREI LOPATIN, VALERII VINOKUR, Argonne National Laboratory — I will talk about electron transport in granular metallic systems at different ranges of temperatures. In particular I demonstrate that at low temperatures,  $T < g_t \delta$ , where  $g_t$  is the tunneling conductance and  $\delta$  is the mean level spacing in a single grain, the conductivity of granular metals strongly depends on the dimensionality of the granular array, while for high-temperature ( $T > g_t \delta$ ) the conductivity is independent of the dimensionality of the array and logarithmically depends on temperature. The logarithmic behavior of the conductivity at large tunneling conductance's obtained in our model can explain numerous experiments on systems with a granular structure including some high -  $T_c$  materials.

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