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Transport through two-dimensional metallic nanoparticle arrays

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ELENA BASCONES, Instituto de Ciencia de Materiales de Madrid — The electronic transport through a metallic nanoparticle array is blocked up to a finite threshold voltage which depends on disorder and size of the array. Here we analyze the transport properties of two-dimensional metallic nanoparticle arrays for different lattice geometries and type of disorder (charge and resistance disorder or vacancies). We show that, contrary to general believe, the current depends linearly on voltage close to threshold. At higher voltages a range of superlinear behavior is found. In general, this superlinear behavior cannot be described in terms of a power-law.

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