



2014, Volume 9, Number 2, p. 276-281

Renormalization of the Coulomb Law in an Amorphous System of Metallic Nanospheres and Its Impact on the Electronic Subsystem

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<https://doi.org/10.1166/jno.2014.1584>

Abstract

We demonstrate relations between the renormalization of the Coulomb interaction in a disordered system of metallic nanospheres and the changes induced by this renormalization in the spectrum of the electronic subsystem of nanospheres. Emergence of bound electron pairs with a total spin equal to zero inside these nanospheres is predicted on the basis of the proposed model. This phenomenon can be a reason of high-temperature superconductivity in such a system.

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