

Abstract Submitted
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Electron conductivity and pairing instabilities in small frustrated nanoclusters KALUM PALANDAGE, GAYANATH FERNANDO, University of Connecticut, Storrs, JAMES DAVENPORT, Computational Science Center, Upton, DANIIL KHOMSKII, II Physikalisches Institut Universitaet zu Koeln, ARMEN KOCHARIAN, California State University, Los Angeles — The thermodynamic phase diagram and electron instabilities have been computed by exact diagonalization technique in small bipartite and frustrated geometries. Here we analyze the behavior of magnetic properties and electron pairing in ensemble of triangular Hubbard clusters with various intersite couplings upon the variation of transverse and longitudinal magnetic field. Our emphasis is on the calculation of persistent currents, supercurrents and optical conductivity on the appearance of molecular magnetism produced by magnetic flux in response functions of a system to the transverse field. The conditions are found for dramatic changes in behavior of charge and spin gaps in terms of general interaction strength and of magnetic flux.

Armen Kocharian
California State University, Los Angeles

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