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Electron pairing in small Hubbard Clusters. KALUM PALANDAGE, GAYANATH FERNANDO, University of Connecticut, ARMEN KOCHARIAN, California State University, JAMES DAVENPORT, Brookhaven National Lab — Exact thermal studies of 4-site Hubbard Nanoclusters are carried out using the analytical eigenvalues. Electron pairing is seen when the on-site Coulomb interaction is smaller than a critical value $U_c(T)$ in the repulsive Hubbard clusters which also show spin pairing at a lower temperature. Specific heat and probability calculations provide strong support for the existence of competing (paired and unpaired) phases near optimal doping. Attractive 4-site Hubbard model can be mapped on to the repulsive model and these studies can be used to understand ferroelectricity in certain metal clusters.

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