DMRG study of the periodic Anderson model PEDRO BERTUSSI, MARCELLO SILVA NETO, TATIANA RAPPOPORT, RAIMUNDO DOS SANTOS, Universidade Federal do Rio de Janeiro, ANDRE MALVEZZI, Universidade Estadual Paulista — We study the ground state of the one-dimensional symmetric periodic Anderson model for various band fillings, \( n \), and for several values of the on-site repulsion \( U \), and of the hybridization \( V \) between the \( c \)- and \( f \)-bands. Through the Density Matrix Renormalization Group (DMRG) method, we calculate magnetic correlation functions, and their structure factors, charge and pairing correlations, as well as inter-orbital correlations, such as \( \langle c^\dagger f + h.c. \rangle \), \( \langle S^c \cdot S^f \rangle \); we also obtain charge and spin gaps. The analysis of these quantities allows a thorough characterization of the system, which can be summarized in a phase diagram in the parameter space \( (U, V, n) \).

Pedro Bertussi
Universidade Federal do Rio de Janeiro

Date submitted: 20 Nov 2009