Density Matrix Renormalization Group Study of a One Dimensional Three-Orbital Hubbard Model: The role of pair hopping and spin-flip interactions. NITIN KAUSHAL, GUANGKUN LIU, CHRIS BISHOP, SHUHUA LIANG, SHAOZHI LI, STEVE JOHNSTON, Department of Physics and Astronomy, The University of Tennessee, Knoxville, ELBIO DAGOTTO, Department of Physics and Astronomy, The University of Tennessee, Knoxville and Oak Ridge National Laboratory — Using the Density Matrix Renormalization Group technique, we extensively study a three-orbital Hubbard model in one dimension without pair hopping and spin-flip Hund interactions. The phase diagram varying the electronic density n and Hubbard U is constructed and compared against previous results obtained using the full interaction Hamiltonian [1]. Our results suggest that spin-flip and pair hopping terms are not crucially important to address the orbital-selective Mott phase [1]. This analysis paves the way to study multiorbital Hubbard models using techniques such as the Constrained-Path Quantum Monte Carlo (CPQMC) and Determinant Quantum Monte Carlo (DQMC) methods since they perform better, reducing for instance the severity of the "sign problem", in the absence of pair hopping and spin flip terms in the interaction.

[1] Julian Rincon et al., *Phys. Rev. Lett.* **112**, *106405 (2014)*, Julian Rincon et al., *Phys. Rev. B.* **90**, *241105 (2014)*

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