

A geometric mapping of the *Semimicroscopic Algebraic Cluster Model* (SACM) is performed. Especial attention is given to the observation of the Pauli exclusion principle. We show that the vibron model, which does not observe the Pauli exclusion principle, can reproduce the same results but with the expense of a quite complicated Hamiltonian. The phase transitions can be of first and second order. Also a critical line appears. The discussion of phase transitions can be reduced to at most three effective parameters, which in turn are functions of all possible interaction parameters in the model.