

## **Magnetic properties of a strongly correlated system on the Bethe lattice**

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The Green’s function and equations of motion formalism allows one to exactly solve a large class of models useful for the study of strongly correlated systems. In this article, we study the influence of an external magnetic field  $h$  on the phase diagram of a system of Fermi particles living on the sites of a Bethe lattice with coordination number  $z$  and interacting through onsite  $U$  and nearest-neighbor  $V$  interactions. This is a physical realization of the extended Hubbard model in the atomic limit. Our results establish the existence of different phases in the three dimensional spaces  $(U, T, h)$  and  $(n, T, h)$  – where  $n$  is the filling – with relative phase transitions, as well as different types of charge ordering. The magnetic field may dramatically affect the critical temperature below which a long-range charge ordered phase is observed, as well as the behavior of thermodynamic quantities, inducing, for instance, magnetization plateaus in the magnetization curves. Relevant thermodynamic quantities – such as specific heat, susceptibility, entropy – are also investigated at finite temperature as functions of the on-site potential, particle density and of the magnetic field.