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Magnetism on the Lieb Lattice[1] FRÉDERIC HÉBERT, Institut Non-Lineaire de Nice, University of Nice, France, VLADIMIR IGLOVIKOV, RICHARD SCALETTAR, Physics Department, University of California, Davis, GEORGE BATROUNI, Institut Non-Lineaire de Nice, University of Nice, France — The fermionic Hubbard model on a square lattice is known to exhibit antiferromagnetism at half-filling for arbitrarily weak interactions, due to the nesting of its Fermi surface and the divergence of the density of states. This talk presents a determinant Quantum Monte Carlo study of the magnetic properties of the Hubbard model on the "Lieb lattice," which is obtained from the square lattice by removing 1/4 of the sites in a regular pattern. This model exhibits a flat band at half-filling, surrounded by two dispersive bands. The non interacting states at half-filling are localized, which allows us to study the magnetic properties of a system that does not have a Fermi surface, although there is an infinite density of states at half-filling. Other magnetic phases may also appear away from half-filling.

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