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Metallic magnetization plateau on triangular lattice[1] ZHIHAO HAO, Department of Physics and Astronomy, Johns Hopkins University, OLEG STARYKH, Department of Physics and Astronomy, University of Utah — The 1/3 magnetization plateau is well established for spin 1/2 Heisenberg antiferromagnetic model on triangular lattice. The state is stable against a large range of spatial anisotropies and is observed in the triangular compound Cs_2CuBr_4. A natural question to ask is whether the plateau state remains stable if the on-site repulsion U is lowered for the underlying Hubbard model. In our work, we studied the one-band Hubbard model on triangular lattice. Through mean-field calculations, it is discovered that an up-up-down spin density wave state with 1/3 of saturation magnetization is stablized for a range of U and magnetic field h. For $4.44t \leq U \leq 4.55t$, the state is a half metal: the spin up bands remain metallic while the spin down bands are insulating. For $U > 4.55t$, the spin up bands become gapped and the system is an insulator. It is speculated the plateau state remains stable for the entire range of $U \geq 4.44t$.

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