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Pentagonal Spin Ice PAULA MELLADO, Department of Engineering and Sciences, Universidad Adolfo Ibañez, GIA-WEI CHERN, Theoretical Division, Los Alamos National Laboratory, Los Alamos, New Mexico, USA — We study a novel version of spin ice in the Pentagonal lattice from a theoretical perspective. The coexistence of even (z=4) and odd (z=3) coordinated vertices in this network gives rise to a mixed spin ice phase where the honeycomb spin ice rule is realized at the z=3 sites and the usual spin ice with no magnetic charge occurs at the z=4 vertices. As the system cools down a phase with charge order precludes the spin ordered stage. Magnetic excitations that violate ice-rule at the z=4 vertices behave as emergent monopoles whose interaction with the background charges from z=3 sites exhibits novel dynamics.

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