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A Topological Spin Glass State of a Frustrated Magnet

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We will present a simple way of understanding the physics of the kagome-triangular-kagome trilayer antiferromagnet by mapping the magnetic interactions onto a problem of an ordered tricolor and a disordered binary sign degree of freedom. By doing so, We will show a systematic way of constructing different classical ground states, and will identify possible zero-energy excitations that involve "partial but extended" numbers of spins in the system. Due to the unique properties of the ground state, we argue that a topological spin glass is the ground state for the quasi-two-dimensional frustrated magnet.