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Spin freezing in geometrically frustrated magnets JORGE REHN, Max Planck Institute for Physics of Complex Systems, Dresden, Germany, ARNAB SEN, Indian Association for the Cultivation of Science, India , ALEXEI ANDREANOV, Max Planck Institute for Physics of Complex Systems, Dresden, Germany, ANTONELLO SCARDICCHIO, The Abdus Salam ICTP, Trieste, Italy, KEDAR DAMLE, The Tata Institute, India, RODERICK MOESSNER, Max Planck Institute for Physics of Complex Systems, Dresden, Germany — Materials which are believed to be faithfully represented by classical frustrated magnets with macroscopically degenerate groundstates, often exhibit spin-freezing. The latter is a transition to a spin-glass phase. Explaining the mechanism of such freezing is not always a simple task, since conventional ingredients, like randomness of the interactions, is not always present in the systems under study. We present a model, where dilution alone generates frustrating interaction between certain spins in the systems and leads to their freezing. The effective model deals with antiferromagnetically coupled Heisenberg spins in 2D. Both the long-range nature of the interaction and its dependence on the distance are crucial for the existence of the glass phase. We confirm our predictions by performing Monte-Carlo simulation of the effective model.

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