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A metamagnetic critical point in a three dimensional frustrated antiferromagnet NIC SHANNON, University of Bristol (UK), KARLO PENC, KFKI (Hungary), YUKITOSHI MOTOME, RIKEN (Japan) — The competition between different forms of order is central to the problem of strong correlation. This is particularly true of frustrated systems, which frequently exist at or near to a zero–temperature critical point. Here we show that a state with a half–magnetization plateau but no long range order can arise when a three dimensional frustrated antiferromagnet is tuned to a critical point bordering a metamagnetic state. We use classical Monte Carlo simulation and low–temperature expansion techniques to accurately characterize this "spin pseudogap" state, and show how its properties relate to those of the critical point. Our results provide an example of three dimensional spin model which can be used to study the relationship between gap and "pseudogap" — i.e. long range and preformed local order — near a metamagnetic critical point.

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