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Theory of spin density wave glasses DAVID MROSS, Caltech, T. SENTHIL, MIT — We study the effects of non-magnetic impurities on an easy-plane spin density wave at $\vec{Q}$ accompanied by a charge density wave at $2\vec{Q}$ in two and three dimensions. Even though any amount of disorder dramatically reduces both spin and charge correlations, spin nematic correlations remain essentially unaffected. This is due to the proliferation of only certain kinds of defects, leading to a uniaxial spin glass. The presence of a Goldstone mode distinguishes this phase from a conventional spin glass, and can serve as an experimental signature. Similarly, in superconductors with finite momentum pairing, a charge-4 condensate persists in the presence of weak disorder, while pair density wave order (the FFLO state) is lost due to impurities.

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