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Magnetic Bose condensation vs. magnon localization in a model magnet with site dilution[1] TOMMASO ROSCILDE, Ecole Normale Superieure - Lyon, STEPHAN HAAS, University of Southern California, RONG YU, University of Tennessee - Knoxville — We report on the theoretical field-temperature phase diagram of anisotropic coupled S=1 chains with site dilution, modeling the magnetic behavior of doped $NiCl_2$-*tetrakis* thiourea (DTN). In absence of doping, this compound clearly displays field-induced Bose-Einstein condensation of magnons [V. Zapf *et al.*, Phys. Rev. Lett. **98**, 047205 (2007)], as revealed by the mean-field scaling of the field-induced ordering temperature, $T_c \sim |H - H_c|^\phi$ with $\phi = 2/3$. The critical field H_c corresponds to a $T = 0$ quantum phase transition (QPT) between a spin gap phase and a gapless ordered phase. Here we show that site dilution opens a novel gapless spin-liquid phase close to the ordering transition, corresponding to a *Bose glass* phase of localized magnons. Disorder leads to a radical change in the universality class of the QPT (which turns into a *quantum percolation* transition), and in the critical temperature scaling, which exhibits a novel universal exponent $\phi \approx 1.2$. A crossover to mean-field scaling of T_c at finite temperature is observed, and explained via a scenario of *thermal percolation* of magnons.

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