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Bose Glass Phase in Heisenberg Dimer Systems OMID NOHADANI, University of Southern California, STEFAN WESSEL, University of Stuttgart, Germany, STEPHAN HAAS, University of Southern California — We study magnetic-field-induced antiferromagnetic order in cubic dimer systems with bond disorder. In the absence of randomness, their phase diagram features a dimer spin liquid regime at small fields $h < h_{c1}$, an antiferromagnetically ordered phase at intermediate fields $h \in [h_{c1}, h_{c2}]$, and a fully polarized regime at large fields beyond h_{c2}. Using stochastic series expansion quantum Monte Carlo simulations, the scaling properties at the quantum critical points are shown to be mean-field-like. Furthermore, we demonstrate that in the presence of bond disorder, a new Bose Glass phase separates the dimer spin liquid regime from the antiferromagnetically ordered phase. This resembles strongly the "triplon localization" which was recently reported for $Tl_{1-x}K_xCuCl_3$ where K is randomly substituted for Tl.[1] [1] Y. Shindo and H. Tanaka, J. Phys. Soc. Jpn. Vol.**73** No.10 (2004).

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