Abstract Submitted
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**Dzyaloshinskii-Moriya interactions and non-magnetic impurities in the s=1/2 kagome antiferromagnet**[1] IOANNIS ROUSOCHATZAKIS, SALVATORE MANMANA, Ecole Polytechnique Federale de Lausanne, Switzerland, ANDREAS LAEUCHLI, Max Planck Institut für Physik Komplexer Systeme, Dresden, Germany, BRUCE NORMAND, FREDERIC MILA, Ecole Polytechnique Federale de Lausanne, Switzerland — Motivated by recent NMR experiments[1] on $ZnCu_3(OH)_6Cl_2$, we present an exact diagonalization study of the combined effect of non-magnetic impurities and Dzyaloshinskii-Moriya (DM) interactions in the $s = 1/2$ Kagomé antiferromagnet. The magnetization response and the correlation matrix data reveal that the dimer freezing which occurs around the vacancy for $D = 0$ [2,3] ($D$ is the magnitude of the DM vectors) persists up to $D/J \simeq 0.07$, above which a phase transition to the $Q = 0$ semiclassical 120° state[4] takes place. Surprisingly however, the dimers next to the vacancy remain strong up to $D/J \sim 2-3$, i.e. well above the critical point. Implications for $ZnCu_3(OH)_6Cl_2$ will be discussed. 1. A. Olariu, *et al.*, Phys. Rev. Lett. **100**, 087202 (2008). 2. S. Dommange, *et al.*, Phys. Rev. B **68**, 224416 (2003). 3. A. Läuchli, *et al.*, Phys. Rev. B **76**, 144113 (2007). 4. O. Cépas, *et al.*, Phys. Rev. B **78**, 140405 (2008).

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