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Absence of magnetic order and unusual spin dynamics in the spin liquid candidate $Na_4Ir_3O_8$ PETER BAKER, FRANCIS PRATT, ISIS Facilty, STFC Rutherford Appleton Laboratory, DHARMALINGHAM PRABHAKARAN, ANDREW STEELE, TOM LANCASTER, BILL HAYES, STEPHEN BLUNDELL, Oxford University Department of Physics — $Na_4Ir_3O_8$ has spin-1/2 iridium ions on a hyperkagome lattice of corner sharing triangles and is a candidate three-dimensional spin liquid [1], which has led to active theoretical study [2,3,4]. Previously reported measurements have shown no evidence for magnetic ordering down to temperatures around three orders of magnitude below the Curie-Weiss constant of $\sim$ 650K [1]. We have carried out muon-spin relaxation measurements which exclude magnetic ordering above 55mK. The field dependence of the muon spin relaxation rate provides further information on the spin dynamics with a temperature-dependent crossover between power laws at intermediate fields suggesting that more than one energy scale is relevant to the fluctuations in this system. [1] Y. Okamoto *et al.*, Phys. Rev. Lett. **99**, 137207 (2007). [2] M. J. Lawler *et al.*, Phys. Rev. Lett. **100**, 227201 (2008). [3] Yi Zhou *et al.*, Phys. Rev. Lett. **101**, 197201 (2008). [4] E. J. Bergholtz *et al.*, Phys. Rev. Lett. **105**, 237202 (2010).

Peter Baker
ISIS Facilty, STFC Rutherford Appleton Laboratory

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