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Controlling magnetic order and quantum disorder in molecule-based magnets SAMAN GHANNADZADEH, High Field Magnet Laboratory, Netherlands, TOM LANCASTER, Durham University, UK, PAUL GODDARD, STEPHEN BLUNDELL, FRANCESCA FORONDA, ISABEL FRANKE, University of Oxford, UK, JOHANNES MÖLLER, ETH Zürich, Switzerland, LINGEN HUANG, JOACHIM WOSNITZA, High Magnetic Field Laboratory, Germany, JAMIE MANSON, Eastern Washington University, USA — Metal-organic coordination polymers are materials in which transition metal ions are linked via organic molecules into chain or plane-like structures. Strong hydrogen bonds enable these units to form three-dimensional lattices, while the underlying anisotropy causes low-dimensional magnetism to evolve. Here the magnetic properties of a number of these compounds are investigated through high-field magnetization, heat capacity, and magnetic susceptibility measurements. It is shown that $[Cu(pyz)H_2O(gly)_2]ClO_4$ is a highly one-dimensional antiferromagnet, whilst the compounds $[Cu(pyz)(gly)]ClO_4$ and $Cu(H_2O)VCF_4$ are dimerized with a non-magnetic singlet ground state and behave as zero-dimensional disordered magnets at zero field. Furthermore, these two materials are shown to undergo a field-induced transition through a quantum critical point into an XY ordered phase, which in the case of $[Cu(pyz)(gly)]ClO_4$, is reminiscent of Bose-Einstein condensation of triplons.

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