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Spinon confinement in a quasi-one-dimensional XXZ Heisenberg antiferromagnet. BELLA LAKE, ANUP K. BERA, Helmholtz-Zentrum Berlin, Germany, FABIAN H. L. ESSLER, Oxford University, UK, LAURENS VANDERSTRAETEN, Ghent University, Belgium, CLAUDIUS HUBIG, ULRICH SCHOLLWOCK, Ludwig Maximilians University, Munich, Germany, A. T. M. NAZMUL ISLAM, Helmholtz-Zentrum Berlin, Germany, ASTRID SCHNEIDEWIND, Julich Centre for Neutron Science, Garching, Germany, DIANA L. QUINTERO-CASTRO, Helmholtz-Zentrum Berlin, Germany — Half-integer spin Heisenberg chains constitute a key paradigm for quantum number fractionalization: flipping a spin creates a minimum of two elementary spinon excitations. These have been observed in numerous experiments. We report on inelastic neutron scattering experiments on the quasi-one-dimensional anisotropic spin-1/2 Heisenberg antiferromagnet $SrCo_2V_2O_8$. These reveal a mechanism for temperature-induced spinon confinement, manifesting itself in the formation of sequences of spinon bound states. A theoretical description of this effect is achieved by a combination of analytical and numerical methods.

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