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Spin Redistribution by Entanglement in an Organic Magnet[1] ANDREY ZHELUDEV, OVIDUE GARLEA, Oak Ridge National Laboratory, SADOFUMI NISHIHARA, YUKO HOSOKOSHI, Osaka Prefecture University, Japan, ARSEN GUKASOV, ALAIN COUSSON, LLB CEA/CNRS, Saclay, France, KATSUYA INOUE, Hiroshima University — Polarized neutron measurements of the spin density distribution in the organic S=1/2-tetramer system 2-[2′,6′-difluoro-4′-(*N*-*tert*-butyl-*N*-oxyamino)phenyl]-4,4,5,5 -tetramethyl-4,5-dihydro-1*H*-imidazol-1-oxyl reveal a redistribution of spin populations within the magnetic molecular unit. The effect is driven by an exceptionally strong quantum entanglement of four spin wavefunctions. Experimental data are in quantitative agreement with quantum theoretical calculations and provide insight on the actual microscopic origin of the relevant entangling interactions.

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