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Resonant Quantum Tunneling of spin chains in 3D-magnetically ordered CoTAC CARLEY PAULSEN, CRTBT-CNRS Grenoble, France, ELSA LHOTEL, CRTBT-CNRS Grenoble, France, EUGENE KHAYSKO, National Academy of Sciences of Ukraine — CoTAC is a well know molecular spin chain system which orders in an antiferromagnetic canted state at 4.15 K. We show that, below 300 mK, the dynamics of the magnetization in the c-direction are governed by resonant quantum tunneling of the magnetization. This conclusion is based on a number of experimental observations: the temperature independence of the relaxation of the magnetization, speeding up of the relaxation at a well defined magnetic field value (1025 Oe) and the increase of the magnetization each time this field is crossed during a succession of minor loops. The key to understanding this behavior could be the absence of resonance in zero field. We propose a mechanism to describe this behavior using a simple model of domain wall nucleation which explains many of the unusual experimental observations.

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