

Abstract Submitted
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Magnetic Frustration in Nanowires: Domino Effect¹ SAMIR LOUNIS, PETER H. DEDERICHS, STEFAN BLÜGEL, Institut für Festkörperforschung and Institute for Advanced Simulation, Forschungszentrum Jülich, D-52425 Jülich, Germany, STEFAN BLÜGEL TEAM — The parity of the number of atoms in finite antiferromagnetic nanowires deposited on ferromagnetic substrates is shown to be crucial in predicting whether the magnetic ground state is non-collinear or collinear [1]. Using the full-potential Korringa-Kohn-Rostoker method for non-collinear magnetism [2] and a Heisenberg model we show that the magnetic structure of the whole nanowires dramatically changes if a *single* adatom is added. Infinite and finite nanochains with even number of adatoms are always magnetically non-collinear while odd numbers of atoms in the wire lead under given conditions to a collinear ferrimagnetic ground state. This unexpected nano-effect, which resembles a domino-effect, occurs only for wires at finite lengths. [1] S. Lounis, P. H. Dederichs, S. Blgel, Phys. Rev. Lett. 101, 107204 (2008). [2] S. Lounis, Ph. Mavropoulos, P. H. Dederichs, S. Blgel, Phys. Rev. B 72 224437 (2005).

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Stefan Blugel
Institut für Festkörperforschung and Institute for Advanced Simulation,
Forschungszentrum Jülich, D-52425 Jülich, Germany

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