

Abstract for an Invited Paper
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First-principles calculation of low-dimensional magnetic structures¹

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Magnetism in low dimensions is of great interest for fundamental and industrial research. Density functional calculations are important to provide clear physical insights for search, design and optimization of magnetic nanostructures that are essential in new technologies. We have recently performed systematic studies for search of giant magnetic anisotropy energies in single atom such as 3d on CuN, monatomic wires encompassing 3d-5d atoms, magnetic thin films such as 3d on Cu and Au. We will review the physics that governs the magnetic anisotropy and other phenomena driven by spin-orbit coupling. We will also discuss our recent results of spin dynamics in nanoentities.

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