Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Strain-induced effects in the electronic and spin properties of a monolayer of ferromagnetic GdAg2 MATTHIEU VERSTRAETE, Univ de Liege, BIN XU, Department of Physics and Institute for Nanoscience and Engineering, University of Arkansas, Fayetteville, Arkansas 72701, USA, LUCIA VITALI, ALEJANDRO CORREA, Departamento de fisica de materiales, Universidad del Pais Vasco, 20018 San Sebastian, Spain — We report on the structural, electronic and magnetic properties of a monolayer of GdAg2, forming a moire pattern on Ag(111). Combining scanning tunneling microscopy and ab initio spin-polarized calcu- lations, we show that the electronic band structure can be shifted linearly via thermal dependent strain of the intra-layer atomic distance in a range between 17%, leading to lateral hetero-structuring. Furthermore, the coupling of the incommensurable GdAg2 alloy layer to the Ag(111) substrate leads to spatially varying atomic relaxation causing subsurface layer buckling, texturing of the electronic and spin properties, and inhomogeneity of the magnetic anisotropy energy across the layer. These results provide perspectives for control of electronic properties and magnetic ordering in atomically-thin layers

Matthieu Verstraete
Univ de Liege

Date submitted: 16 Nov 2016 Electronic form version 1.4