Contribution ID: **93** Type: **Talk**

【113】Quantitative Magnetometry on Nanostructured MBE Grown 2D In-Plane Ferromagnet

Tuesday 28 June 2022 14:45 (15 minutes)

The discovery of ferromagnetic 2D van der Waals (vdW) crystals allows the study of novel magnetic phenomena at a reduced dimensionality. While exfoliated 2D vdW crystals offer only limited control of their exact geometry, 2D magnets grown by molecular beam epitaxy (MBE) overcome this limitation. Here, we investigate the MBE grown 2D in-plane ferromagnet $EuGe_2$ on a nanostructured substrate by quantitative scanning nitrogen-vacancy magnetometry. We determine its fundamental magnetic parameters quantitatively in various geometric configurations and offer new insights into the transition from bulk properties to the 2D limit. Moreover, we provide the basis for targeted engineering of geometries to nucleate novel spin-textures and domain patterns.

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Session Classification: Condensed Matter Physics

Track Classification: Condensed Matter Physics (KOND)