

中央大學物理學系

Department of Physics, National Central University



Colloquium

Towards Atto-Magnetism: Ultrafast optical Inter-site spin transfer in low dimensional ultrathin film systems

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Date: 2023/09/19 (Tue)

Venue: S4-625

Time: 14:00-16:00

Abstract:

Two dimensional systems play a pivotal role in shaping the landscape of future spintronics. Here, we use a femtosecond pulse to directly transfer spin polarization from one element to another in Mn/Co bilayers. By atomic-layer-by-layer growth of Mn thin films on ferromagnetic (FM) Co, we examine the thickness-dependent optical inter-site spin transfer (OISTR) between Mn and Co. The results demonstrate the extraordinary sensitivity of OISTR in ultrathin film systems, where even small variations in a few atomic layers significantly impact its spin exchange dynamics. The ultrathin film engineering allows precise control the fastest light-driven spin interactions, not only providing a platform for exploring fundamental aspects of quantum and spin physics but also offering practical pathways for developing spintronic devices, that can operate on few-femtosecond or faster time scales.