Skyrmion motion in magnetic multilayer systems

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Room temperature magnetic quasi-particles such as skyrmions are of importance for novel magnetic information storage designs [1-5]. Areas of interest are electrical nucleation, detection and manipulation of skyrmions. This talk will discuss aspects of these three areas in magnetic multilayer systems such as [Pt/CoB/Ir]. In particular, the focus will be on current driven skyrmion motion in nanostructures. Magnetic imaging techniques such as scanning transmission x ray microscopy and magnetic force microscopy were used to track the skyrmion position (Fig. 1 a-c shows six colour-coded skyrmions and their current induced motion). A wide range of skyrmion diameters were accessed through the application of out of plane magnetic fields and thus the skyrmion size dependence on the velocity and skyrmion Hall angle was evaluated [6]. The effects of magnetic inhomogeneities on stability and motion will be discussed.

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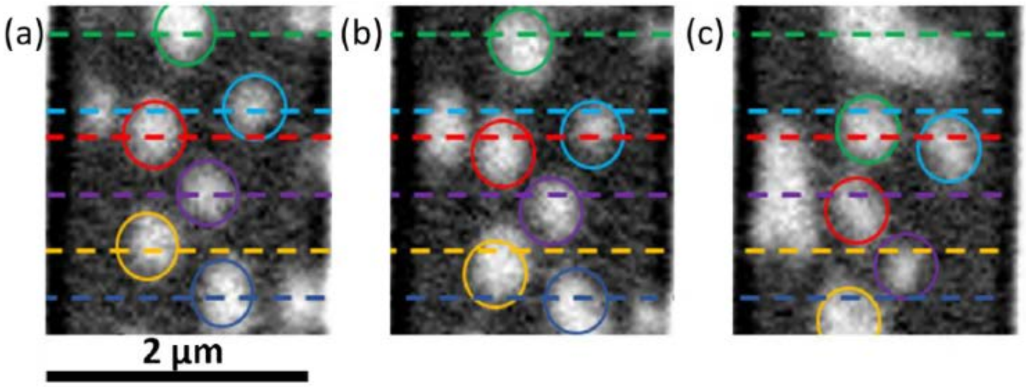

Figure 1: (a) to (c) Scanning transmission x-ray microscopy images after two consecutive current pulses. Skyrmion motion along the current direction is observed.

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