

692nd ASRC Seminar

Date: Wednesday, July 12, 13:30 ~ 14:30

Location: Room 302, ASRC bldg.

Speaker: Dr Yuta Yamane
(RIKEN)

Title: Skyrmion-number dependence of magnetic bubble dynamics

Abstract: In recent years, attention has been focused on topologically nontrivial magnetic textures such as magnetic vortices and skyrmions. They exhibit rich physics stemming from their characteristic structures, which can be advantageous for technological applications. Another interesting example among such topological textures is magnetic bubbles.

Vortices, skyrmions, and bubbles are quantified by a common topological quantity, the so-called skyrmion number. Whereas a vortex and a skyrmion carry the skyrmion number $1/2$ and 1 , respectively, for a bubble the skyrmion number can take any integer value depending on the magnetic profile on its circumference and the size of the bubble. Dynamical response of a bubble to driving forces depends highly on its skyrmion number; a tantalizing prospect is that magnetic bubbles with different skyrmion numbers can provide a variety of new functionalities in device applications, which may not be offered by skyrmions and vortices.

In the talk, we will discuss our theoretical work on the relation between the magnetic bubble dynamics and its skyrmion number.

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