Low Frequency Skyrmion Excitations in Skyrmion lattice

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An isolated magnetic soliton is known to possess a set of zero frequency excitations that can acquire a finite frequency when symmetry is broken, also known as Goldstone modes. Here, we are investigating with numerical simulations (mumax3) how the shape of a nanodot influences on the low frequency skyrmion excitations and give rise to finite frequency excitations. Particular interest is put on the hexagonal shape nanodot that potential possesses symmetry of the potential profile of Skyrmion Lattice (SkL). The different influence on frequency between the fixed potential due to boundary of the nanodot and potential arising from moving freely neighboring skyrmions in SkL is discussed.