

Spontaneous spin-chain fluctuation observed with coherent x-ray scattering

Sunday, January 27, 2019 3:00 PM (25 minutes)

As we explore new materials harboring entangled quantum states, an efficient probe for their detection is necessary. Coherent x-rays are a direct probe for equilibrium and nonequilibrium dynamics that can simultaneously measure a large number of particles. In my talk, I will use our recent work on dipolar-coupled artificial spin lattices (ASL) and explore the possible route to use coherent x-rays as a probe for entangled spintronic system. Dipolar-coupled systems are receiving considerable interest lately due to their possible application to quantum storage device and quantum computing. However, their collective dynamics in the vicinity of phase transitions is still an under-explored area. We studied magnetic dynamics in ASL using coherent soft x-rays. Our analysis revealed spontaneous nucleation and annihilation of spin-chains with a 3 ms fluctuation time.

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