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Atomistic modeling of $L1_0$ FePt: path to HAMR 5Tb/in2 TIANRAN CHEN, Department of Physics, West Chester University, West Chester, PA 19383, MOURAD BENAKLI, CHRIS REA, Seagate Technology, Bloomington, MN 55435 — Heat assisted magnetic recording (HAMR) is a promising approach for increasing the storage density of hard disk drives. To increase data density, information must be written in small grains, which requires materials with high anisotropy energy such as $L1_0$ FePt. On the other hand, high anisotropy implies high coercivity, making it difficult to write the data with existing recording heads. This issue can be overcome by the technique of HAMR, where a laser is used to heat the recording medium to reduce its coercivity while retaining good thermal stability at room temperature due to the large anisotropy energy. One of the keys to the success of HAMR is the precise control of writing process. In this talk, I will propose a Monte Carlo simulation, based on an atomistic model, that would allow us to study the magnetic properties of $L1_0$ FePt and dynamics of spin reversal for the writing process in HAMR.

Tianran Chen
Department of Physics, West Chester University, West Chester, PA 19383

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