

Abstract Submitted
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All-Optical Helicity Dependent Spin Switching in a Many-Spin System¹ TANNER LATTA, G. P. ZHANG, Indiana State University — All-optical helicity dependent magnetic switching (AOS) is achieved through using an ultrafast laser pulse to manipulate and switch the spin of an electron from one direction to another. This process happens in a short amount of femtoseconds after the laser pulse is introduced. All-optical helicity dependent magnetic switching (AOS) does not fall to the assistance of any external magnetic field. Linearly polarized light, as well as right and left circularly polarized light are used to manipulate the spin of the electrons. Ferrimagnetic, rather than ferromagnetic, materials are more suitable to create conditions in which AOS are viable due to the orientation of the spins within this material. In the following study we show and conclude that AOS is possible with the use of left and right circularly polarized laser pulses. All-optical helicity dependent magnetic switching has many applications in magnetic recording technology or magnetic memory devices.

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