

Abstract Submitted
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Optical Aharanov-Bohm oscillations in DMS type-II ZnMnTe/ZnSe quantum dots¹ I.R. SELLERS, V.R. WHITESIDE, M. EGINLIGIL, University at Buffalo, W.-C. CHOU, National Chiao Tung University, China, I. KHAN, A. PETROU, University at Buffalo, A.O. GOVOROV, Ohio University, B.D. MCCOMBE, University at Buffalo — Low temperature magneto-photo luminescence studies of diluted magnetic semiconductor Zn(Mn)Te quantum dots (QDs) will be presented. As expected, the exchange interaction between the Mn spin and electric charge carriers results in a strong optical polarization of the luminescence at low temperature. However, in addition, the sample geometry for the structure, which consists of five Zn(Mn)Te QD layers separated by narrow ZnSe spacer layers, will be shown to be particularly suitable for the observation of the optical Aharanov-Bohm effect. This is illustrated by the presence of strong Aharanov-Bohm oscillations in the photoluminescence intensity. Finally, although the (ZnMn)Te system is known to be paramagnetic, at low temperatures the QD structures described display evidence of spontaneous magnetization at zero applied magnetic field both in the optical circular polarization degree and the magnetization. The origin of this behavior will be discussed.

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I.R. Sellers
University at Buffalo

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