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Using MuSR to probe internal magnetic field features in the II-IV-V₂:Mn DMS PATRICK MENGYAN, R.L. LICHTI, Texas Tech University, Lubbock, TX 79409-1051, USA, Y.G. CELEBI, Istanbul University, Beyazit, 34459 Istanbul, Turkey, B.B. BAKER, L. HUDY, Texas Tech University, Lubbock, TX 79409-1051, USA, E. CATEK, Istanbul University, Beyazit, 34459 Istanbul, Turkey, K.T. ZAWILSKI, P.G. SCHUNEMANN, BAE Systems, Advanced Systems and Technology, Nashua, NH 03061-0868, USA — Muon Spin Research/Rotation/Relaxation/Resonance (MuSR) is a technique that utilizes 100% spin polarized muons as a very sensitive probe of a material's local magnetic and electronic environment. In this contribution, I will give a brief review of the Longitudinal Field Muon Spin Relaxation technique and present preliminary results as applied to investigating local magnetic features in weakly Mn doped ZnGeP₂ Chalcopyrite semiconductors. The discovery of room temperature ferromagnetism in some of the II-IV-V₂ dilute magnetic systems as well as their conventional semiconducting properties makes these materials prime candidates for prospective use in the field of spin-electronics. The mechanism responsible for connecting the local magnetic features to the bulk magnetic properties is not yet understood. The MuSR technique and the preliminary results presented here are promising first steps in the investigation and attempt to further the understanding of the local magnetic features in these dilute magnetic semiconducting materials.

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