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Optically Detected Magnetic Resonance; Computational Predictions and Experimental Results SCOTT CROSSEN, JOHN COLTON, Brigham Young University — Electron spin resonance (ESR) is an important tool in understanding the quantum-mechanical properties of condensed matter. When coupled with a photoluminescence measuring component, it is possible to optically record ESR information contained in the resulting induced light. This unique form of ESR is called optically detected magnetic resonance (ODMR). In this presentation we compare experimental ODMR data with ESR predictions generated from a computational modeling system known as "EasySpin". To investigate the differences between these two methods we will study one spin-system in particular: irradiated 4H silicon carbide. This specimen will serve as the primary means to connect the two very different forms of computational and practical ESR spectroscopy commonly used today. Methods and theory for both methods will be accurately described and resulting spectra will be presented for comparison. Though there will always be some differences, results show that computational ESR predictions match experimental results to the same extent that the underlying Hamiltonian for that particular system is understood.

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