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Optical Study of CdTe Quantum Dots for use in Temperature Sensors JAMES ERIKSON, Brigham Young University — Quantum dots are molecules made to a specific size in order to preserve quantum properties, allowing their use in myriad applications. We are investigating CdTe quantum dots with an energy gap tuned to 2 eV for potential use as a non-invasive temperature sensor. We are working to develop a model for the temperature dependence of the lifetime of stimulated photoluminescence. Lifetime is measured using time correlated single photon counting over a wide range of temperatures. Our attempts to find a mathematical model to describe the dependence have met with little success, however through the application of machine learning algorithms we are able to accurately determine temperatures with an uncertainty of approximately 1 K.

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