

Abstract Submitted  
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**Optical Band Gap and the Burstein Moss Shift in Doped PbTe**

ZACHARY GIBBS, Cal Inst of Tech (Caltech), ROBERT WHITE, University of Oklahoma, JEFFREY SNYDER, Cal Inst of Tech (Caltech) — We will present an analysis of the room temperature Burstein Moss shift in Iodine doped PbTe. The shift explains the phenomena of a measured increase in the optical band gap as the carrier concentration increases. We quantify the magnitude of the effect and extract an estimate of the true band gap—which is observed to decrease with doping level (also known as band gap renormalization). The results imply that care be taken when using measured optical band gaps for comparison to thermoelectric transport data in doped samples because the true band gap can be quite different than the measured one. Temperature dependent optical measurements in IV-VI materials will also be discussed.

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