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Quantum Dot Modulators BRENDAN TURNER, Brigham Young University, MANISH MEHTA, RAMESH LAGHUMAVARAPU, DIANA HUFFAKER, University of New Mexico — Mach-zender devices are an ideal modulation source for communication networks at 1.3 μm and 1.55 μm. Superlinear electro-optical effects are a desirable feature in mach-zender modulators since their large second order electro-optical coefficient would give complete signal extinction at a small voltage. Quantum dot devices show promise for such applications in the 1.3 μm band. In this project we performed free-space characterization of stacked InAs quantum dot devices. A crossed polarizer and analyzer combination were used to determine the phase retardation/voltage relation and electro-optical coefficients for said materials. We used different pump wavelengths to analyze their effect on modulation. Further calculations were carried out to determine the theoretical extinction ratio of such devices as part of a mach-zender modulator.

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