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Electrical Characterization of Be-Doped InAs/InAsSb Superlattices HENRY BOURASSA, ARTHUR SIWECKI, MO AHOUJJA, SAID ELHAMRI, Department of Physics, University of Dayton, Dayton, Ohio 45469, ELIZABETH STEENBERGEN, WILLIAM MITCHEL, SHIN MOU, GAIL BROWN, Air Force Research Laboratory, Materials and Manufacturing Directorate, Wright-Patterson AFB, Ohio 45433 — The InAs/InAsSb type-II superlattice materials studied to date for infrared detector applications have been residually n-type, but p-type absorber regions with minority carrier electrons can result in increased photodiode quantum efficiency, R_oA, and detectivity. Therefore, Be-doped InAs/InAsSb superlattices were investigated to determine the p-type InAs/InAsSb superlattice material transport properties essential to developing high quality photodiode absorber materials. Hall measurements performed at 10K revealed that the superlattice converted to p-type with Be-doping of 3 x10^{16} cm^{-3} and the hole mobility reached 24 400 cm^2/Vs. Photoresponse measurements at 10K confirmed the 175 meV bandgap and material optical quality.

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