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Dependence of the groundstate interband optical transition in InAs-GaSb superlattices on the width of the GaSb layers PATRICK FOLKES, J. LITTLE, S. SVENSSON, K. OLVER, Army Research Laboratory, Adelphi Maryland, A. AMTOUT, S. KRISHNA, Center for High Technology Materials, University of New Mexico, Albuquerque New Mexico — We have investigated the optical characteristics of a set of InAs-GaSb superlattice structures (SLS) which have InAs layers with a fixed width of 25 Å and GaSb layers whose width varies from structure to structure over the range 25 Å to 100 Å. Photoluminescence measurements were carried out over the range 10K – 100K on the SLS. Using photodiodes fabricated from the SLS, measurements of the photocurrent-excitation energy spectrum and the time-resolved photoconductivity were carried out at 78K. The observed dependence of the relative oscillator strength of the SLS band-edge transition on the GaSb layer width will be compared with theory¹. The effect of defects on the the optical and transport properties of the SLS and the dependence of this effect on the GaSb layer width will be discussed.

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