

Abstract Submitted
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Defects in GaSb and InAs/GaSb superlattices¹ JIANWEI WANG, YONG ZHANG, Electrical and Computer Engineering, University of North Carolina at Charlotte — Unintentionally doped GaSb is known to be p-type. One possible explanation for the p-type conductivity is due to the existence of Ga on Sb anti-site defects that behave as acceptors. Such an acceptor-like defect state could potentially impact the performance of an IR detector based on a type II superlattice InAs/GaSb. We use pseudopotential density functional theory to investigate this defect state in both bulk GaSb and the superlattice. We calculate the defect levels with and without spin-orbit interaction and with the p-d band separation and bandgaps corrected. Although the defect might be acceptor-like, its energy level does not necessarily follow the GaSb band edge that is shifted in the superlattice due to quantum confinement.

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