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Title:Intense terahertz emission from undoped GaAs/n-type GaAs and InAs/AlSb structures grown on Si substrates In the transmission-geometry excitation
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Abstract:Intense terahertz radiation was generated from femtosecond laser-irradiated InAs and GaAs layers on Si substrates. Results show that InAs/Si and GaAs/Si films can be excited in reflection and transmission geometries. The InAs/Si film exhibited weaker emission for both excitation cases but it will be more feasible as a spectroscopic THz source due to the absence of complex spectral features in its emission spectrum. The GaAs/Si emission is characterized by Fabry-Perot oscillations but it is 90% of that of p-InAs bulk crystal emission intensity in the reflection geometry. Excitation fluence measurements showed that the InAs/Si film saturates easily due to the laser's shallow penetration depth in InAs.
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