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Title:Driving intervalley scattering and impact ionization in InAs with intense terahertz pulses
Authors:Ho, I-Chen (1); Zhang, X.-C. (1)
Author affiliation:(1) Center for Terahertz Research, Rensselaer Polytechnic Institute, Troy, NY 12180, United States
Corresponding author:Ho, I.-C.
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Abstract:We report intense terahertz (THz) pulses inducing intervalley scattering and impact ionization mechanisms in doped InAs crystals by THz pump-THz probe measurements. Two competing mechanisms are observed by varying the impurity doping type of the semiconductors and the strength of the THz field. For p-doped InAs, a cascaded carrier generation dominates while for n-doped InAs, both mechanisms have to be considered. Electron fractional occupancy between the and L valleys is estimated at different field strengths.
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