

Abstract Submitted
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Quantum Hall Devices as efficient and fast THz photodetectors NIKOLAI G. KALUGIN, Dept. of Physics, Texas A&M University, CHRISTIAN STELLMACH, Inst. of Applied Physics, TU Braunschweig, Germany, YURI B. VASILYEV, Ioffe Physicotechnical Inst., St. Petersburg, Russia, RENE BONK, ALEXANDER HIRSCH, Inst. of Applied Physics, TU Braunschweig, Germany, GÜNTER HEIN, Physikalisch-Technische Bundesanstalt, Germany, GEORG NACHTWEI, Inst. of Applied Physics, TU Braunschweig, Germany — Efficient THz photodetectors on the basis of quantum Hall (QH) system have been developed during the recent years. Engineering of the device shape and selection of the parameters of operation allow to implement QH detectors with response times ranging from 10 ns to milliseconds. The spectral resolution of QH detectors, ranging between 1-2 meV at energies of 8-12 meV of the incoming radiation, is a function of the electron mobility and of the bias voltage. QH photodetectors are tunable by the magnetic field and a gate voltage. The combination of these properties together with the high sensitivity of QH THz detectors serves as a basis for an implementation of reliable spectrometer-on-chip devices for THz spectroscopy and imaging.

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