

Recent Progress in Quantum Well Infrared Photodetector Research and Development at Jet Propulsion Laboratory

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ABSTRACT

One of the simplest device realizations of the classic particle-in-the-box problem of basic quantum mechanics is the Quantum Well Infrared Photodetector (QWIP). In this presentation we will discuss the optimization of the detector design, material growth and processing that has culminated in realization of 15 micron cutoff 128x128 QWIP focal plane array camera, hand-held and palm-size 256x256 long-wavelength QWIP cameras and 648x480 long-wavelength cameras, holding forth great promise for myriad applications in 6-25 micron wavelength range in science, medicine, defense and industry. In addition, we will present the recent developments in very-long-wavelength QWIPs, broadband QWIPs, mid- and long-wavelength dualband QWIPs, and long- and very-long-wavelength dualband QWIPs at Jet Propulsion Laboratory for various NASA and DOD applications. The research described in this abstract was performed by the Center for Space Microelectronics Technology, Jet Propulsion Laboratory, California Institute of Technology, and was jointly sponsored by the Ballistic Missile Defense Organization/Innovative Science and Technology Office, and the National Aeronautics and Space Administration, Office of Space Science.