



Bio Nano Robo Seminars

Wednesday, July 29, 2009, 17h

Room Dw601, Block D, 6th floor

IIS-University of Tokyo, Komaba 4-6-1, Meguro-ku, Tokyo 153-8505.

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Electronic Ratchet Effect Under MicroWave Radiation

Abstract

The Ratchet effect, discussed by Feynman in a simple mechanical model, has been observed in various systems including macroporous silicon membranes, microfluidic channels and molecular transport in biological motor proteins and in bacteria.

From the recent experimental studies performed in Grenoble, on a semiconductor heterojunction, with arrays of asymmetric antidots of nanoscopic size, we demonstrate the first electronic prototype of electronic ratchet under microwave radiation.

This research will offer significant advances and applications towards the realization of innovative microwave GHz- THz detectors, sensors and current microgenerators, such as photovoltaic cells (nanostructures without external electrical source and under space microwave or terahertz radiation). Due to their small size and very simple usage (current or voltage generated by radiation) such sensors and compact detectors will find a broad range of technological applications, such as miniaturized frequency demodulators.

FREE ENTRANCE

a banquet will follow



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