

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Photoelectron Multipliers Based On Avalanche Pn-I-Pn Structures** HILDA CERDEIRA, Max Planck Institut fuer Physik komplexer Systeme, Noethnitzerstr. 38, D-01187 Dresden, KONSTANTYN LUKIN, Institute for Radiophysics and Electronics, National Academy of Sciences of Ukraine, 12 Akademika Proskura St., Kharkov, 61085, Ukraine, PAVEL MAKSYMOMV, Institute for Radiophysics and Electronics, National Academy of Sciences of Ukraine, 12 Akademika Proskura St., Kharkov, 61085, Ukraine — We present a new optoelectronic device, which consists of a multilayered semiconductor structure, where the necessary conditions for the creation of photoelectrons are met, such that it will enable sequential avalanche multiplication of electrons and holes inside two depletion slabs created around the p-n junctions of a reverse biased pn-i-pn structure [1]. The mathematical model and computer simulations of this Semiconductor Photo-electron Multiplier (SPM) for different semiconductor materials are presented. Its performance is evaluated and later on compared with conventional devices. [1] K.A.Lukin, H.A.Cerdeira, A.A.Colavita, Current Oscillations in Avalanche Particle Detectors with pnipn-Structure. IEEE Transactions on Electron Devices. 43(3), 1996, 473-478.

Hilda Cerdeira  
max Planck Institut fuer Physik komplexer Systeme, Noethnitzerstr. 38, D-01187 Dresden

Date submitted: 30 Nov 2005

Electronic form version 1.4