Contribution ID: **13** Type: **not specified**

Update of 3D Simulations and Processing of New BNL 3D-Trench-Electrode Detectors

Wednesday 25 May 2011 11:10 (20 minutes)

Update of 3D Simulations and Processing of New BNL 3D-Trench-Electrode Detectors
Z. Li1 , D. Bassignana2, G. Pellegrini2, M. Lozano2 and D. Quirion2

1 Brookhaven National Laboratory, Bldg. 535B, Upton, NY 11973-5000, USA
2Centro Nacional de Microelectrónica IMB-CNM-CSIC, Campus Universitat Autònoma de Barcelona, 08193 Bellaterra, Barcelona (Spain)

More full 3D simulations on the new BNL 3D-Trench-Electrode detectors have been performed. In addition to the square geometry, hexangular and near-circular geometry single cells with boundary conditions on both top (oxide, oxide charges) and bottom (oxide, oxide charges, and spray ion implant) surfaces were simulated. Large cells with a diameter up to 300 μm need a bias voltage as small as 5 volts to fully deplete for a 400 μm thickness high resistivity (non-irradiated) detector. Some small effects of slightly lower electric field (about 25-30% less) in the corners of square, hexangular geometry cells have been found by simulation. These effects are not significant since the fields are high enough for carriers to drift out before significant diffusion effect can take place. The fabrication of the first prototype detectors has already begun at CNM in Spain. The etch process of trenches up to 250 μm in depth with various geometries and cell sizes went extremely well. Some photos of etched trenches will be shown.

Author: LI, Zheng (BNL)

Presenter: LI, Zheng (BNL)

Session Classification: Pixel and 3D sensors