

# Electrode Isolation on P-type Silicon Devices with Alumina (Al<sub>2</sub>O<sub>3</sub>) Passivation Layer

*Friday, 16 August 2013 15:20 (15 minutes)*

Inter channel shortening due to electron accumulation layer near silicon surface is a problem for any segmented p-type and double-sided n-type detectors. The standard approach for inter-strip or inter-pixel isolation is an implanted p-type barrier, implemented as either p-stop or p-spray. We present an alternative approach to the isolation problem, which features alumina deposition as a top passivation layer. The alumina layer forms a negative interface charge with silicon surface that prevents formation of the electron accumulation layer. We test the method with conventional p-type sensors that do not have the p-type barrier between electrodes. The sensors have been reprocessed: the top side silicon oxide passivation is removed, and the alumina layer is deposited. Our measurements prove that the alumina layer provides the inter-electrode isolation.

## APS member ID

60029561

**Primary authors:** SADROZINSKI, Hartmut (SCIPP- UC Santa Cruz); FADEYEV, Vitaliy (SCIPP, UCSC); GALLOWAY, Zachary (SCIPP, UCSC)

**Presenter:** GALLOWAY, Zachary (SCIPP, UCSC)

**Session Classification:** Accelerators, Detectors, and Computing

**Track Classification:** Accelerators, Detectors, and Computing