Contribution ID: **20**   Type: **Oral presentation using Zoom**

Chronopixel Silicon CMOS Sensor Development for the ILC

A monolithic silicon CMOS pixel detector with time-stamping capability (Chronopixel) has been developed based on design goals of the International Linear Collider (ILC). Each hit is accompanied by a time tag with sufficient precision to assign it to a particular ILC bunch crossing - thus the name Chronopixel. This reduces the occupancy to negligible levels, even in the innermost vertex detector layer, yielding a robust vertex detector which operates at background levels significantly in excess of those currently foreseen for the ILC. The Chronopixel can record and store time stamps for two hits in each pixel while using standard CMOS processing for manufacturing. Following two earlier prototype fabrication runs and tests, a third prototype design was developed to resolve earlier issues, including a high capacitance problem. This problem was traced to the TSMC 90 nm technology design rules, which led to an unacceptably large value of the sensor diode capacitance. Six different layouts for the sensor diode were tested in the third prototype, and tests demonstrated that the high capacitance problem was solved. The third prototype has also been exposed to HL-LHC radiation levels; results of these tests are also presented. Simulation of the signal formation from charge particle crossing detector with one particular sensor design also was done and results will be shown.

1st preferred time slot for your oral presentation

10:00-12:00 JST (3:00-5:00 CEST, 21:00-23:00 EDT, 18:00-20:00 PDT)

2nd preferred time slot for your oral presentation

13:00-15:00 JST (6:00-8:00 CEST, 0:00-2:00 EDT, 21:00-23:00 PDT)

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Session Classification: C-1: Tracking detectors

Track Classification: Parallel sessions: Detectors: Session C: Tracking detectors