

Abstract Submitted  
for the APR17 Meeting of  
The American Physical Society

**Module production for the Phase 1 upgrade of the CMS forward pixel detector**<sup>1</sup> JOAQUIN SIADO CASTANEDA, Univ of Nebraska - Lincoln — For Run 2 the Large Hadron Collider will run at a much higher instantaneous luminosity, which requires an upgrade of the CMS pixel detector. The detector consists of rectangular silicon sensors, segmented into  $100\ \mu\text{m}$  by  $150\ \mu\text{m}$  pixels, bonded to readout chips, with one sensor and a  $8\times 2$  array of readout chips forming a module. Due to its high granularity and good spatial resolution, about  $10\ \mu\text{m}$  for a single hit, the pixel detector is used for track reconstruction, pileup mitigation, and b-quark tagging in many physics analyses. Being the innermost sub-detector of CMS it receives the most radiation damage, and therefore needs to be replaced most often. For the phase 1 upgrade an additional disk in the forward region and increased buffer space in the readout chip will improve the pixel performance by increasing efficiency and reducing fake rates. The University of Nebraska-Lincoln is one of the two sites where modules are being assembled. This talk features the steps of the assembly process as well as challenges encountered and overcome during production of over 500 modules.

<sup>1</sup>The CMS Collaboration

Joaquin Siado Castaneda  
Univ of Nebraska - Lincoln

Date submitted: 29 Sep 2016

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