Contribution ID: **38** Type: **ORAL**

# Diamond Sensors for Future High Energy Experiments, including Testbeam Results of 3D Diamond Sensor

*Tuesday 29 September 2015 14:00 (30 minutes)*

With the recent turn-on of the LHC at 13TeV, ATLAS and CMS are planning to upgrade their innermost tracking layers with more radiation hard technologies. Chemical Vapor Deposition (CVD) diamond is one such technology. CVD diamond has been used extensively in beam condition monitors as the innermost detectors in the highest radiation areas of BaBar, Belle, CDF and all LHC experiments. This talk will describe the lessons learned in constructing the ATLAS Beam Conditions Monitor (BCM) and ATLAS Diamond Beam Monitor (DBM) both of which are based on CVD diamond with the goal of elucidating the issues that should be addressed for future diamond based detectors. The talk will also discuss the present status of state-of-the-art polycrystalline and single-crystal CVD diamond and the latest results on the radiation tolerance of the highest quality material for a range of proton energies, pions and neutrons obtained with this material.

**Primary authors:** BACHMAIR, Felix Caspar (Eidgenoessische Tech. Hochschule Zuerich (CH)); KAGAN, Harris (Ohio State University (US)); TRISCHUK, William (University of Toronto (CA))

**Presenter:** BACHMAIR, Felix Caspar (Eidgenoessische Tech. Hochschule Zuerich (CH))

**Session Classification:** Applications in High Energy Physics

**Track Classification:** New materials, new technologies associated