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The MONODIAM-HE project : mono-crystalline diamonds for HL-LHC pixel detectors

A new 4-year R&D endeavor, carried out by four French laboratories involved in LHC experiments (IPHC Strasbourg and LPSC Grenoble) and in material science (LSPM Villetaneuse and ICube Strasbourg), is aiming at elaborating sizable ($1 \times 1 \text{ cm}^2$) mono-crystalline diamonds that could be used in the inner most parts of the High-Luminosity LHC pixel detectors. Polycrystalline diamonds are already used in several collider experiments thanks to their good capability to withstand high radiation doses. Mono-crystalline diamond (MCD) sensors could feature enhanced detection properties and a more homogeneous response.

After a brief presentation of the state of art of the production of MCD for particle detection, the speaker will briefly present the methodology that will be followed in this project and the first obtained results.

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