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Radiation detection based on CVD diamond

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Diamond is a semiconductor with outstanding material properties such as high radiation hardness, high free carrier mobilities, very low leakage current, and very high thermal conductivity. Synthetic diamond is therefore a good candidate for very demanding radiation detector applications.

The state of the art of Chemical Vapor Deposition (CVD) diamond detector technology is reviewed and its applications in several fields, such as high energy physics, radiotherapy and nuclear fusion reactors are described. Recent innovative developments, such as electric contact fabrication and front-end electronics design, are also briefly discussed.

Primary author: CHIODINI, Gabriele (INFN Sezione di Lecce)

Presenter: CHIODINI, Gabriele (INFN Sezione di Lecce)

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