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Structural, compositional and defect studies on hadron irradiated B-doped silicon diodes

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HRTEM, LA-ICP-MS and DLTS techniques were employed to characterize several types of B-doped silicon diodes after irradiation with hadrons. The HRTEM results on LGAD samples irradiated with 10^{19}cm^{-2} show that there is a preferential grouping of defects along tracks normal to the film surface. We will present the LA-ICP-MS technique, recently installed in NIMP, with which we could estimate the Boron concentration not only in the moderate doped LGADs gain layer but also in high resistivity EPI and FZ silicon. The DLTS results on samples of different resistivity and impurity content are presented and discussed in relation with the acceptor removal process.

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