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The numerous configurations of „interstitial boron “and their involvement in ARP of LGADs

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Abstract: Defects in silicon are known to occur in numerous different configurations each exhibiting different properties e.g. related to the interaction with charge carriers. In this contribution recent results of density functional theory calculations of the so-called “boron interstitial (B_i)”defect in silicon are shown and compared to an already existing model of that defect. The “boron interstitial”defect means that a boron and a silicon atom share one lattice position. Configurations of that defect where the silicon interstitial atom is one or more lattice constants away from the boron atom are not considered. The acceptor removal phenomenon (ARP) which impacts low gain avalanche detectors (LGAD) is discussed on the basis of these recent results.

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