Imaging device based on GaN for proton therapy

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Résumé

Due to its specificities, proton beam can destroy cancer cells without attacking the surrounding healthy tissue. However, the proton beam position and shape must be accurately measured before each radiation since it directly affects the treatment efficiency and the eventual collateral damages. Currently, ionization chambers are often used for this procedure but their resolution and sensitivity are limited while their complexity and cost are high. We propose a new approach by developing robust GaN semiconductor detectors which increase the control on the irradiated dose while strongly reducing the system complexity and cost. Indeed, direct reading of the current induced by the protons in a large GaN detector array allows for a high sensitivity and high resolution imaging. Thus, this innovation may drastically improve the proton therapy.

Mots-Clés: Protonthérapie, détecteur, semiconducteur

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