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From HEP to Particle Therapy

Tuesday 19 February 2019 11:00 (18 minutes)

CMRP always was an integral part of Australian HEP community and benefited from HEP silicon radiation detector R&D that led to many innovations in proton and Heavy Ion Therapy quality assurance. Talk will overview development at CMRP of innovative silicon radiation detectors utilizing edgeless and 3D silicon detector technology which was originally developed for HEP Si trackers and their application at many particle therapy accelerator facilities around the world. These detectors allowed fast determination of the range of GeV energy range ions and their Radiobiological Efficiency (RBE) without which successful treatment is impossible. Recently the silicon 3D detectors "mushroom"invented and developed at CMRP and fabricated jointly with SINTEF were selected by ESA as the best detector for GCR detection and prediction of SEU in electronics and radiobiological hazard of radiation for astronauts during forthcoming space missions. http://space-env.esa.int/index.php/news-reader/items/tissue-equivalent-crew-dosimeter-based-on-novel- 3d-si-processing.html These detectors were used for benchmarking of Geant 4 in HIT. Collaboration between HEP and Medical Physics communities is important for HEP technology transfer to particle therapy.

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