

The HYPMED PET/MRI Insert for Enhanced Diagnosis of Breast Cancer

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Addressing the increasing demands for improved cancer diagnosis and personalized medicine, the H2020 EU project HYPMED aims to develop a PET-RF insert, which is compatible to a 1.5T-MRI Philips Ingenia.

The insert targets the needs of enhanced breast cancer diagnosis, namely offering high-resolution imaging, increased systemsensitivity and also high system-integrity. The PET insert comprises two independent PET rings with a field of view (FOV) of 28 cm × 10 cm, as well as two dual-channel local receive coils. The mechanical designed allows the opening and closing of the PET rings, such that it is possible to perform biopsies without causing major effort and immobilize the breasts. Each PET ring utilizes 14×2 detector stacks comprising three-layered Lutetium- γ trium oxyorthosilicate (LYSO) crystal arrays with 1.3mm pitch. The MR-compatible detectors are based on the Hyperion III platform, using a sensor tile with 12×12 individual digital silicon photomultiplier (SiPM) channels (DPC-3200-22, Philips Digital Photon Counting) having a sensitive area of ~48mm × 48mm each. The scintillator's staggered design comprises 3425 crystals and allows the usage of depth of interaction (DOI) information, resulting in high and homogeneous spatial resolution across the FOVs.

We will present the first PET and MRI results of our system.

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