

Prospects for imaging prostate cancer with PET/CT and PET/MR

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Prostate cancer is one of the most common forms of cancer among men. Early diagnosis, correct staging, accurate detection of metastasis, and monitoring of the therapy are the key tasks that could greatly benefit from medical imaging. After a review of the main developments in the field of PET tracers for prostate cancer, the impact of improved PET instrumentation with good spatial resolution and high sensitivity are discussed, together with the latest development in PET technology: LSO/LYSO scintillators, resolution recovery, and time-of-flight reconstruction. New directions and multiple approaches in PET instrumentation for prostate cancer are presented and discussed. In particular, improved hardware and noise suppressing reconstruction algorithms allow for higher detectability of small lesions and better spatial resolution in PET/CT and PET/MR. This can be beneficial for guiding biopsy and surgery, and for accurate therapy monitoring.

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