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Review Article

4D PET: Beyond Conventional Dynamic PET Imaging

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Abstract:

In this paper, we review novel techniques in the emerging field of spatiotemporal 4D PET imaging. We will discuss existing limitations in conventional dynamic PET imaging which involves independent reconstruction of dynamic PET datasets. Various approaches that seek to attempt some or all of these limitations are reviewed in this work, including techniques that utilize iterative temporal smoothing, advanced temporal basis functions, principal components transformation of the dynamic data, wavelet-based techniques as well as direct kinetic parameter estimation methods. Extension of 4D PET to 5D PET in which the additional dimension of (respiratory or cardiac) gating is considered has also been discussed

Keywords:

PET ، Spatiotemporal ، 4D ، Dynamic Imaging ، 5D

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