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Performance characterization and human imaging experience with the long axial field-of-view PennPET Explorer Whole-body Imager

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The current generation of commercial PET scanners has excellent performance and diagnostic image quality, but the system sensitivity and dynamic imaging capability are limited by the scanner's axial length. In recent years there has been an interest in developing whole-body PET scanners with much longer AFOV that not only increase the system sensitivity but can also image the whole-body of a patient without bed translation. An important outcome of very high sensitivity is the potential to significantly reduce routine clinical scan times which can be beneficial in reducing patient motion artifacts and increase patient throughput. Alternately, the injected dose can be reduced that is beneficial in areas such as pediatric imaging and serial imaging of patients for monitoring response to therapy. Whole-body imaging with large axial coverage will allow one to perform dynamic imaging for pharmacokinetic studies over multiple organs. In this presentation we will present ongoing progress in our development and performance characterization of the PennPET Explorer imager. We will also present our early human imaging experience demonstrating the promise of longer axial FOV systems for both clinical and research investigations.

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