

# Motion analysis of Subjects standing in walk-through total body PET using infrared based localization

*Thursday, 23 May 2024 12:00 (20 minutes)*

The introduction of the Dual Flat Panel Walk-Through Total Body PET (WT-TB-PET) scan system has revolutionized imaging procedures, albeit presenting challenges stemming from patient motion while standing upright. Understanding motion patterns is pivotal for optimizing image quality and diagnostic accuracy. This study aims to analyse subject motion within the designed mock-up for the WT-TB-PET scanner, evaluating head and respiratory motion during normal breathing and breath-hold conditions. 18 volunteers participated, undergoing evaluation within the WT-TB-PET scanner with infrared markers placed on key anatomical points. 3D coordinates were captured over time for each marker using a depth camera, followed by image processing techniques. The results revealed distinct motion patterns across markers. Head marker exhibited minimal motion, with average deviations of 0.85 mm during normal breathing and 0.94 mm during breath-hold conditions. Conversely, the abdomen displayed the greatest range, with average deviations measuring 2.68 mm during normal breathing and 2.32 mm during breath-hold. Notably, during breath-hold, all markers exhibited reduced motion compared to normal breathing, except for the head marker. In conclusion, our findings elucidate dynamic motion patterns in WT-TB-PET imaging and underscore the necessity of motion correction strategies. Despite observed motion, integrating WT-TB-PET systems into clinical practice remains feasible under normal breathing conditions.

## Field

Systems and applications

**Primary author:** AZIZ, Rabia (Ghent University)

**Co-authors:** Mr MAEBE, Jens (Ghent University); Prof. VANDENBERGHE, Stefaan (Ghent University)

**Presenter:** AZIZ, Rabia (Ghent University)

**Session Classification:** Total body PET imaging

**Track Classification:** Total body imaging