## Validation of the peneloPET application for clinical PET/CT with TOF

K. M. Abushab<sup>1</sup>, J.L Herraiz<sup>1</sup>, E. Vicente<sup>1</sup>, S. España<sup>2</sup>, J.M Udías<sup>1</sup>

 <sup>1</sup> Grupo de Física Nuclear, Dpto. Física Atómica, Molecular y Nuclear, UCM, Madrid, Spain
<sup>2</sup> Department of Radiation Oncology, Massachusetts General Hospital and Harvard Medical School, Boston, MA, USA
e-mail: khaledshap@hotmail.com; tlfno: 91 394 4484

Positron Emission Tomography (PET) is a functional based medical imaging modality that utilized coincidence detection of collinear annihilation photons to reconstruct a quantitative image of the in vivo radiotracer distribution. Significant technological improvements have made it possible to add time-of-flight (TOF) capabilities to PET scanners to improve pet imaging. TOF information allows shorter lines of response to be projected for each annihilation event, effectively reducing the amount of noise inherent to the modality. The goals of this work are to validate and investigate the TOF and other factors which influence clinical PET by means of simulation with peneloPET.