Contribution ID: **186** Type: **Poster**

Design, construction and evaluation of a cylindrical phantom for the quality assurance in Computed Tomography

Was designed and produced a cylindrical phantom in PMMA material for evaluate the image quality parameters: spatial resolution, high and low contrast, magnification, uniformity and reproducibility of Hounsfield numbers for Computed Tomography (CT) through the formation of images in the acquisition of tomographic images. The phantom was designed and built under the recommendations of international quality control protocols in CT. Initially its geometry was simulated in GEANT4 and then constructed in axial sections by means laser cutting technology. Subsequently, physical properties such as density, shape and size of each component were established. Internal holes were inserted into the acrylic discs (modules) and filled with selected materials to evaluate the contrast of the image. Metal pieces and wires were incorporated to evaluate the thickness of the tomographic sections. Also within the same module were established objects to determine the spatial resolution of the tomographic system. The Phantom was evaluated in three hospital centers in Tunja city and tomographic axial images were analyzed using a specialized software where were determined Hounsfield numbers of each structure and its tolerance range. Finally, results were intercompared and validated with a phantom Catpham 500 certified, obtaining differences smaller than 5% in the estimation of the densities of materials of reference.

Authors: COY L., Julián A. (Physics School, Universidad Pedagógica y Tecnológica de Colombia, Tunja- Colombia); OLAYA DÁVILA, H. (Physics Department, Universidad Nacional de Colombia, Bogotá D.C –Colombia); DÍAZ MERCHÁN, J.A. (Physics School, Universidad Pedagógica y Tecnológica de Colombia, Tunja- Colombia)

Presenter: OLAYA DÁVILA, H. (Physics Department, Universidad Nacional de Colombia, Bogotá D.C –Colombia)

Session Classification: Poster Session - MP

Track Classification: Medical Physics