

BIOPET: DEDICATED PLANT AND SOIL MICROORGANISM POSITRON EMISSION TOMOGRAPHY SYSTEM

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Abstract:

The Nuclear Imaging Detector Development group at the Department of Physics, University of Regina is developing Canada's first positron emission tomography (PET) system for plant physiological function studies. In its current configuration the system consists of four detectors heads, each with active area of 48×48 mm². In a typical arrangement the four detectors are grouped in two pairs of opposing heads for detecting coincident events from positron annihilation, however the system geometry, data acquisition and image reconstruction are flexible and can be easily reconfigured on-demand to accommodate other scanner configurations. The detector pairs can be scanned along the vertical axis allowing to image plants up to 50 cm tall, while the plant within the Field of View (FOV) of the scanner can be rotated on a precisioncontrolled motorized platform to provide a complete 3D coverage of the plant. Current development and characterization of the plant PET system will be presented.