VCl2022 - The 16th Vienna Conference on Instrumentation



Contribution ID: 291

Type: Recorded Presentation

The 100µPET project: a small-animal PET scanner for ultra-high-resolution molecular imaging with monolithic silicon pixel sensors

Recent developments in semiconductor pixel detectors allow for a new generation of positron-emission tomography (PET) scanners that, in combination with advanced image reconstruction algorithms, will allow for a few hundred microns spatial resolutions. Such novel scanners will pioneer ultra-high-resolution molecular imaging, a field that is expected to have an enormous impact in several medical domains, neurology among others.

The University of Geneva, the Hôpitaux Universitaires de Genève, and the École Polytechnique Fédérale de Lausanne have launched the 100μ PET project that aims to produce a small-animal PET scanner with ultrahigh resolution. This prototype, which will use a stack of 60 monolithic silicon pixel sensors as a detection medium, will provide volumetric spatial resolution one order of magnitude better than today's best operating PET scanners.

The R&D on the optimisation of the monolithic pixel ASIC, the readout system and the mechanics, as well as the simulation of the scanner performance, will be presented.

Primary experiment

Author: VICENTE BARRETO PINTO, Mateus (Universite de Geneve (CH))

Co-authors: PANDINI, Carlo Enrico (University of Geneva); CADOUX, Frank Raphael (Universite de Geneve (CH)); FERRERE, Didier (Universite de Geneve (CH)); PAOLOZZI, Lorenzo (CERN); SAIDI, Jihad (Universite de Geneve (CH)); VALERIO, Pierpaolo (CERN); IACOBUCCI, Giuseppe (Universite de Geneve (CH))

Presenter: VICENTE BARRETO PINTO, Mateus (Universite de Geneve (CH))

Track Classification: Medical Applications