Update on Gamma-ray imaging work

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Overview of presentation

HPGe & CZT for Nuclear Structure Physics &
Gamma-ray imaging applications:

- Nuclear Physics: AGATA
- Medical Imaging: SmartPET/ProSPECTus
- Environmental/Decommissioning: PorGamRayS
- Explosives/Drugs: Distinguish (Ge/CsI)
- Hostile environment: GammaKEV

- Energies 60 keV → 10 MeV
• Coincidence analysis of the SmartPET detector has been completed and analysis is in progress.

• A theoretical basis comparison and the further comparison with the KTH planar work is in progress.

• Optimising of Compton imaging algorithms with Geant (inc Doppler) and experimental results in progress.
ProSPECTus

Next generation Single Photon Emission Computed Tomography

Nuclear Physics Group, Dept of Physics, University of Liverpool, Nuclear Physics & Technology Groups, STFC Daresbury Laboratory, MARIARC & Royal Liverpool University NHS Trust, CCO NHS Foundation Trust
ProSPECTus: What is new?

ProSPECTus is a Compton Imager

- Radical change → No mechanical collimator
- Utilising Si + CZT semiconductor sensors
- Pixellated technology and existing ASIC
- Position resolution 7-10mm → 2-3mm
- Sensitivity factor ~100 larger
- Simultaneous SPECT/MRI
The PorGamRayS project is developing a portable gamma-ray spectrometer with Compton imaging capability (60keV – 2MeV).

Gamma-ray spectroscopy/imaging with CZT detectors. **Pulse Shape Analysis** to refine spatial resolution and correct charge collection issues.
CZT + Nucam2
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