

Simulation update

Giulia D'Imperio for the simulation working group

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Digitization code updates

Digitization code has been updated to include the last developments presented by Fabrizio at the collaboration meeting

- Accepted pull request by Pietro for saturation code optimization
- “saturation” branch merged with “master”
- Copy of the old code without saturation in the “no-sat” branch

All branches				
master	Updated 8 minutes ago by gdimperi	Default		
saturation	Updated 5 days ago by gdimperi	1 0	#5 Merged	
no-sat	Updated 14 months ago by gdimperi	28 0	New pull request	

Monte Carlo samples

Produced some Monte Carlo samples with Geant4 for X-rays (1000 events per point)

- Ti 4.5 keV	<code>/nfs/cygno2/CYGN0-MC-data/pbs_outputs/CYGN0_60_40_ER_4p5_keV/CYGN0_60_40_ER_4p5_keV.root</code>
- Cu 8 keV	<code>/nfs/cygno2/CYGN0-MC-data/pbs_outputs/CYGN0_60_40_ER_8_keV/CYGN0_60_40_ER_8_keV.root</code>
- Rb 15 keV	<code>/nfs/cygno2/CYGN0-MC-data/pbs_outputs/CYGN0_60_40_ER_15_keV/CYGN0_60_40_ER_15_keV.root</code>
- Mo 18 keV	<code>/nfs/cygno2/CYGN0-MC-data/pbs_outputs/CYGN0_60_40_ER_18_keV/CYGN0_60_40_ER_18_keV.root</code>
- Ag 24 keV	<code>/nfs/cygno2/CYGN0-MC-data/pbs_outputs/CYGN0_60_40_ER_24_keV/CYGN0_60_40_ER_24_keV.root</code>
- Ba 35 keV	<code>/nfs/cygno2/CYGN0-MC-data/pbs_outputs/CYGN0_60_40_ER_35_keV/CYGN0_60_40_ER_35_keV.root</code>
- Tb 47 keV	<code>/nfs/cygno2/CYGN0-MC-data/pbs_outputs/CYGN0_60_40_ER_47_keV/CYGN0_60_40_ER_47_keV.root</code>

Pietro has already started to digitize these samples

Simulation plans

- Improve data/MC agreement for ^{55}Fe data (Pietro)
 - test if changing absorption length parameter works
- Digitize x-rays simulation and do systematic data/MC comparison (Pietro, Giulia)
 - check data/MC agreement at different energies
 - possibly define a set of simulation parameters for “official” digitization
- Digitization of LIME/CYGNO background tracks (Giulia, ...?)
 - check how the tracks from different bkg sources appear in the detector (position, direction)
 - need to produce dedicated samples since background simulations produced so far do not have the hits positions saved in the output (only energy spectrum)
- 2x2 LIME geometry (instead of 3x3) may be the chosen design for CYGNO demonstrator
 - check background calculation