

Update on LUXE GEANT4 Simulation

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LUXE S&A meeting
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Fast background simulation

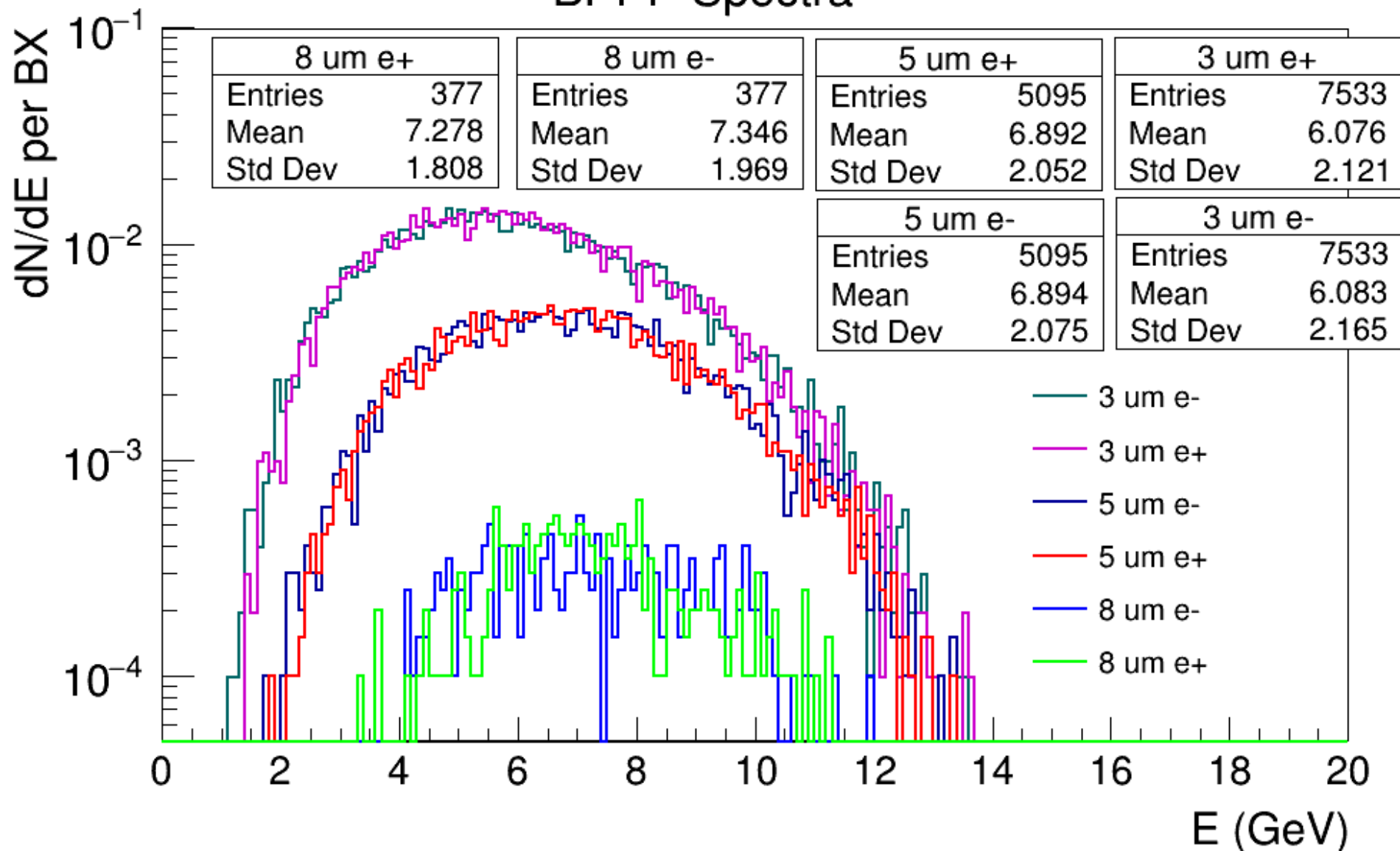
Simulation	# particles	Processed (BX)	Location	Notes
Electron background for electron-laser setup, fast simulation updated ECal geometry	2.3983e11	159.89	/nfs/dust/luxe/user/oborysov/hics_list /list_root_hics_background_fast_c99bba6d_0_18_luxe.txt	Setup corresponds to commit c99bba6d of hics_fast branch, ECal has stainless casing. Particle tracking is stopped when it crosses any of beam dump or shielding volumes.
Electron background for electron-laser setup, fast simulation updated ECal geometry	20.0774e11	138.5	/nfs/dust/luxe/user/oborysov/hics_list/list_root_hics_background_fast_9f6b6590_0_16.txt	Setup corresponds to commit 9f6b6590 of hics_fast branch, ECal has stainless casing and additional lead shielding between the beam pipe and detectors (tracker, ECal). Particle tracking is stopped when it crosses any of beam dump or shielding volumes.
Background for gamma-laser setup, fast simulation updated ECal geometry	6.051e10	40.34	/nfs/dust/luxe/user/oborysov/hics_list/list_root_bppp_background_fast_0508546b_0_5.txt	ECal has stainless casing. Particle tracking is stopped when it crosses Shielding, BeamDumpAssembly, GammaBeamDumpAssembly
Background for gamma-laser setup, fast simulation, updated geometry to reduce background	1.9381e11	129.2	/nfs/dust/luxe/user/oborysov/bppp_list/list_root_bppp_background_fast_850fd10d_0_11.txt /nfs/dust/luxe/user/oborysov/bppp_list /list_root_bppp_background_fast_850fd10d_12_16.txt	ECal has stainless casing. The beam pipe section which joins interaction chamber with vacuum chamber changed to rectangular with bigger cross section. Particle tracking is stopped when it crosses Shielding, BeamDumpAssembly, GammaBeamDumpAssembly

716G /nfs/dust/luxe/group/MCProduction/Background/elaser/07012021_9f6b6590_fast_sim

2.3T /nfs/dust/luxe/group/MCProduction/Background/gammalaser/10012021_850fd10d_fast_sim

BPPP spectra

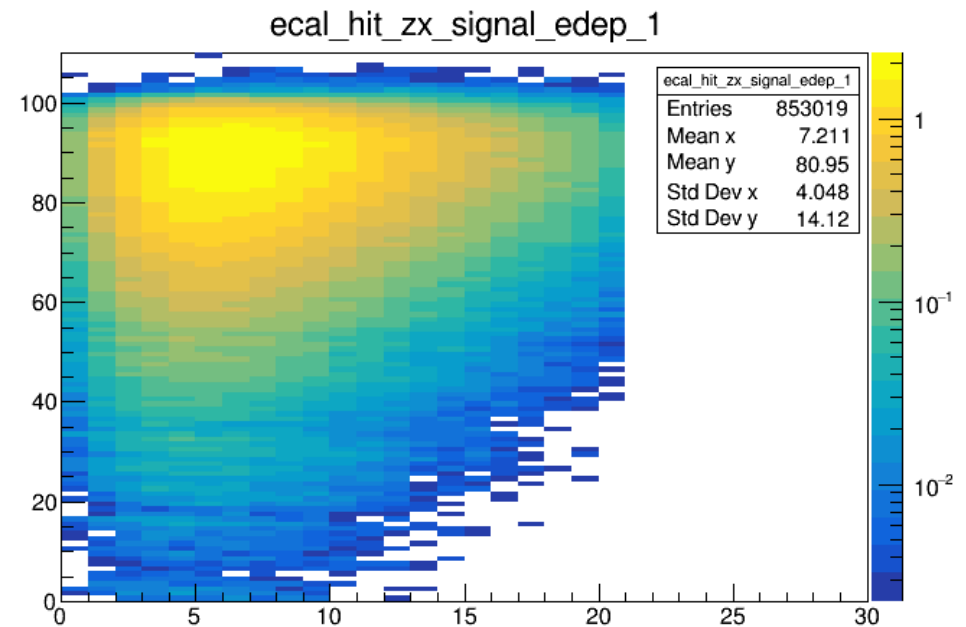
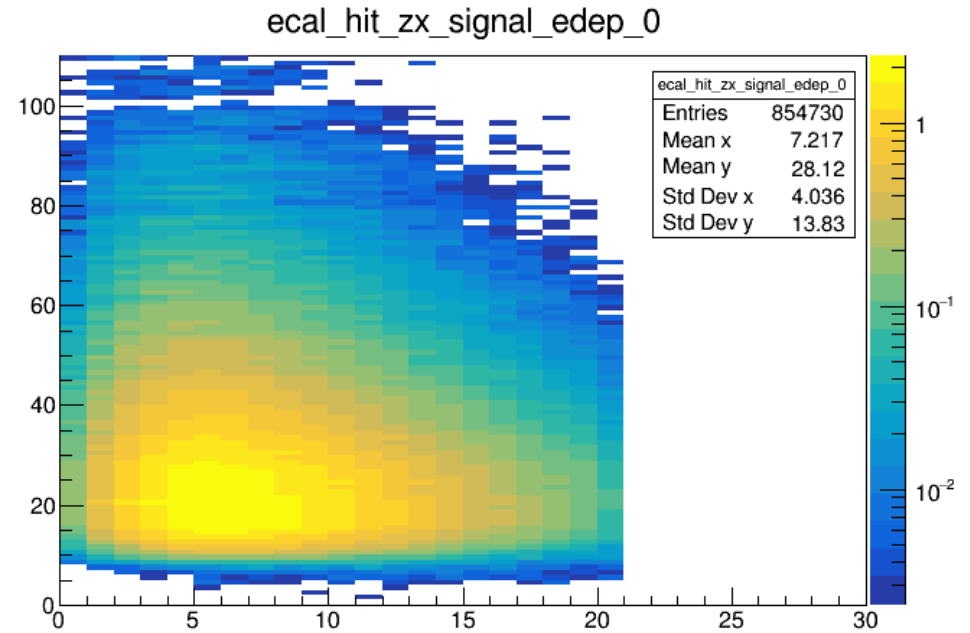
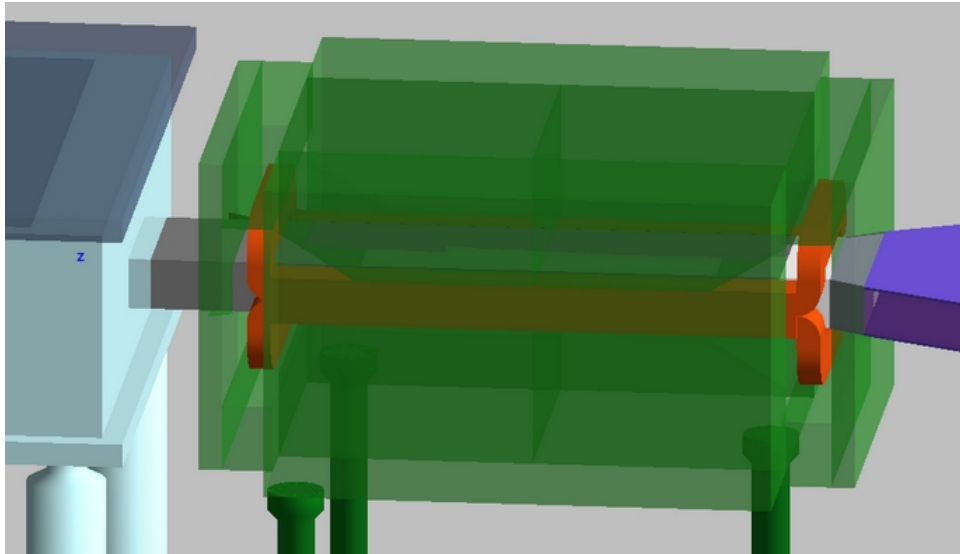
BPPP Spectra



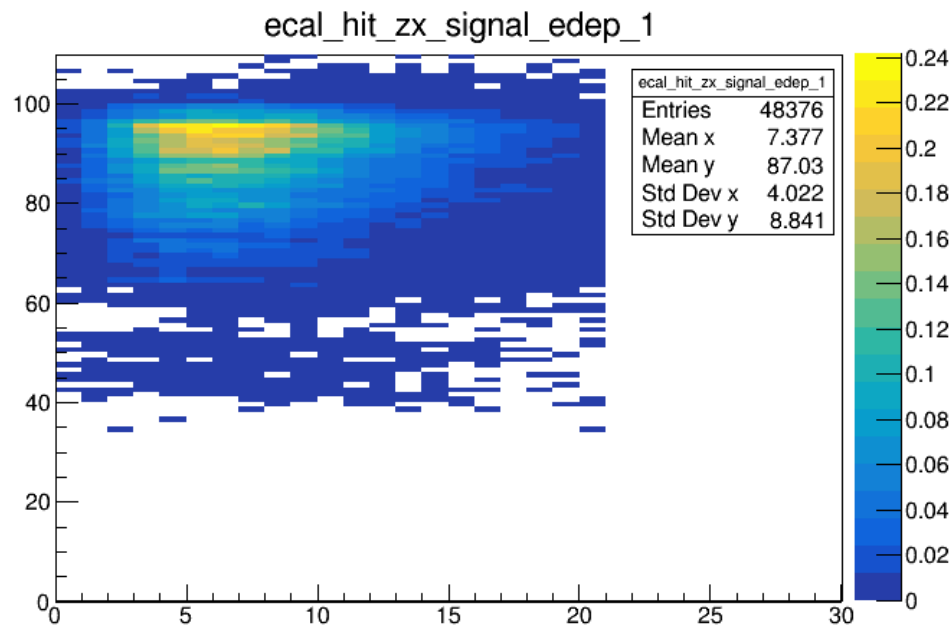
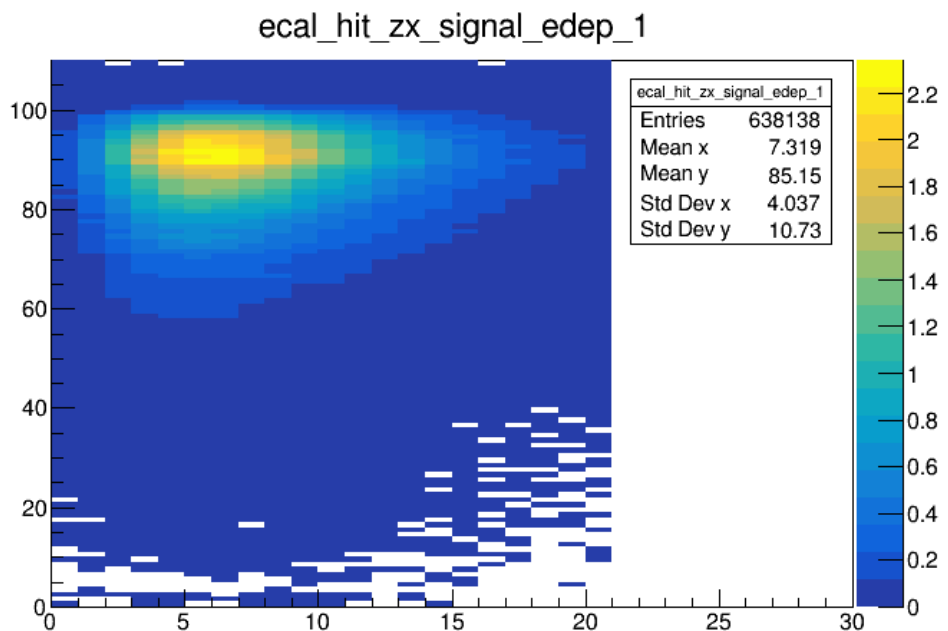
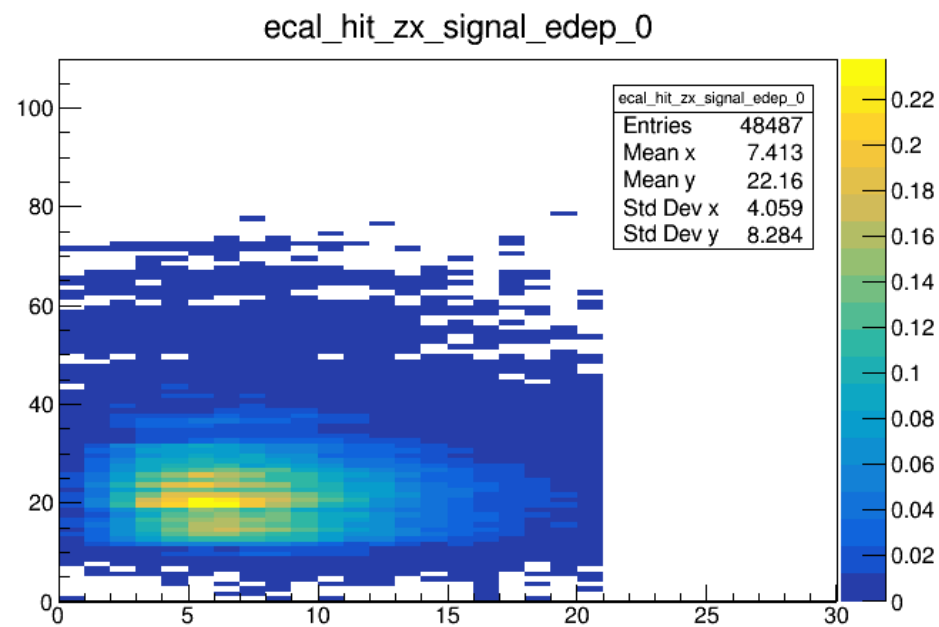
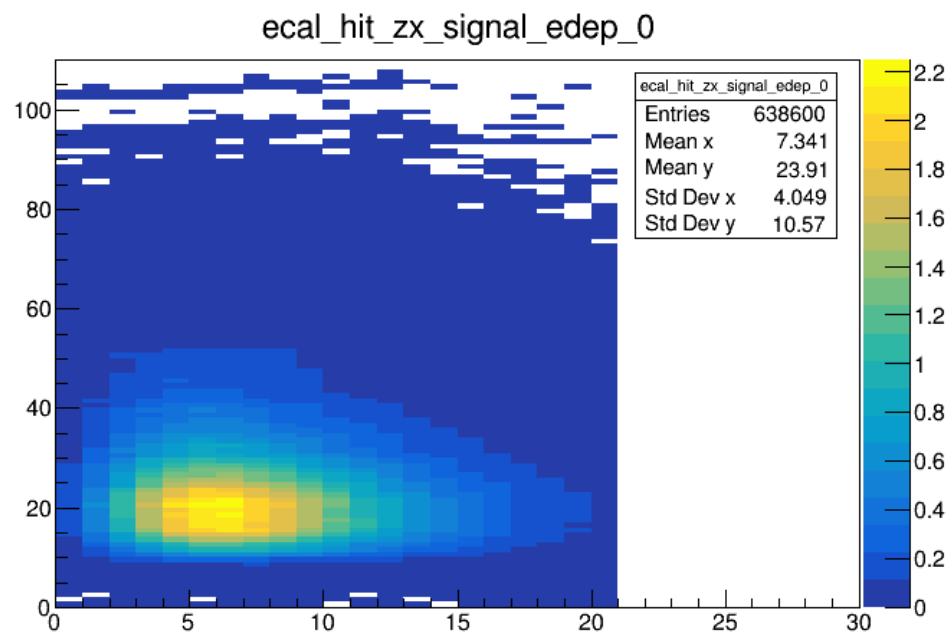
BPPP ECal signal, $w_0=3\mu\text{m}$

Geant4 simulation:

- No weight scaling;
- Modified beam pipe IPC-VC.



BPPP ECal signal, $w_0=5\mu\text{m}$ and $w_0=8\mu\text{m}$



Compton photons

IPStrong and
Ptarmigan

