Software Coordinator's Report

ILD Software and Analysis Meeting
Dec. 19 2018

Outline

- Generator
- Simulation
- Reconstruction
- Monte Carlo Production

Generator

M.Berggren

- started discussion on verification of Whizard for 250 GeV production
- generator group will define a process for this, e.g.
  - run every type of channel with individual events, check E,P conservation, check heavy meson decays,….
- use of Whizard 2 for aa_lowpt (as interface to Barklow/Peskin generator and Pythia)
  - need to contact T.Barklow about status
  - if we use Whizard 1.9 we need to have a different parameterisation of beam energy spectrum
- question about extended uds,cc,bb production:
  - how much statistics do we need here ?
  - potentially need to do this w/ production system

Simulation

A.Miyamoto

Pair simulation : kin. energy cut, hit rate, CPU time

Split GP files by kinetic energy and study # hits/Bx and CPU time

Sim/hits/Bx by 13 Bx's simulation. max_step_length=10mm, no_kin. cut in geant4

	kin.Ene.range(keV)	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-max
	ILD_l5_v05	SimHits/Bx									
SimHits in each detector	VXD	0.00	0.15	0.00	0.54	0.31	1.31	3.46	21.62	90.85	4176.35
	FTD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	180.42
	SIT	0.15	0.15	0.08	0.15	0.15	0.08	0.46	0.69	0.77	150.49
	TPC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	631.07
	SET	0.08	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.31	38.72
	ECal	0.23	0.23	0.15	0.15	0.31	0.00	0.08	0.38	1.00	546.21
	HCal	3.85	4.62	5.15	2.77	3.62	2.38	2.54	2.77	3.15	9192.48
	Yoke	1.00	2.00	2.08	1.92	1.92	2.62	3.23	3.54	3.15	260165.00
	BeamCal	0.38	1.08	0.62	0.46	0.92	1.08	0.77	0.85	0.77	772014.00
	LHCal	3.46	4.23	4.46	2.31	2.85	1.62	2.00	2.15	2.38	7303.67
	LumiCal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	525.61
CPUtime/Bx(sec)		14882.8	23863.6	3330.02	1268.04	759.625	452.035	318.462	226.685	184.154	56487.8

	kin.Ene.range(keV)	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-max
	ILD_s5_v05	SimHits/Bx									
SimHits in each detector	VXD	0.38	0.31	0.46	1.54	0.69	1.85	0.46	0.38	14.69	3637.56
	FTD	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.15	0.00	177.40
	SIT	0.31	1.54	0.15	0.15	0.23	0.00	0.31	0.38	0.62	140.05
	TPC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	654.41
	SET	0.00	0.62	0.08	0.08	0.00	0.00	0.00	0.08	0.00	53.28
	ECal	0.00	1.00	0.54	0.38	0.31	0.08	0.00	0.00	0.23	561.31
	HCal	0.23	1.92	2.46	1.46	1.77	2.00	2.62	2.15	1.85	9726.88
	Yoke	1.54	2.92	3.00	1.46	2.46	2.31	3.31	2.92	1.85	256348.00
	BeamCal	0.00	0.85	0.46	0.85	1.08	0.85	1.62	2.15	3.08	758849.00
	LHCal	0.23	1.85	1.85	1.31	1.54	1.69	1.62	1.38	1.31	7558.79
	LumiCal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	484.15
CPUtime/Bx(sec)		2724.87	69695.1	9241.11	2638.64	1223.39	639.701	372.465	264.613	231.097	57445.2

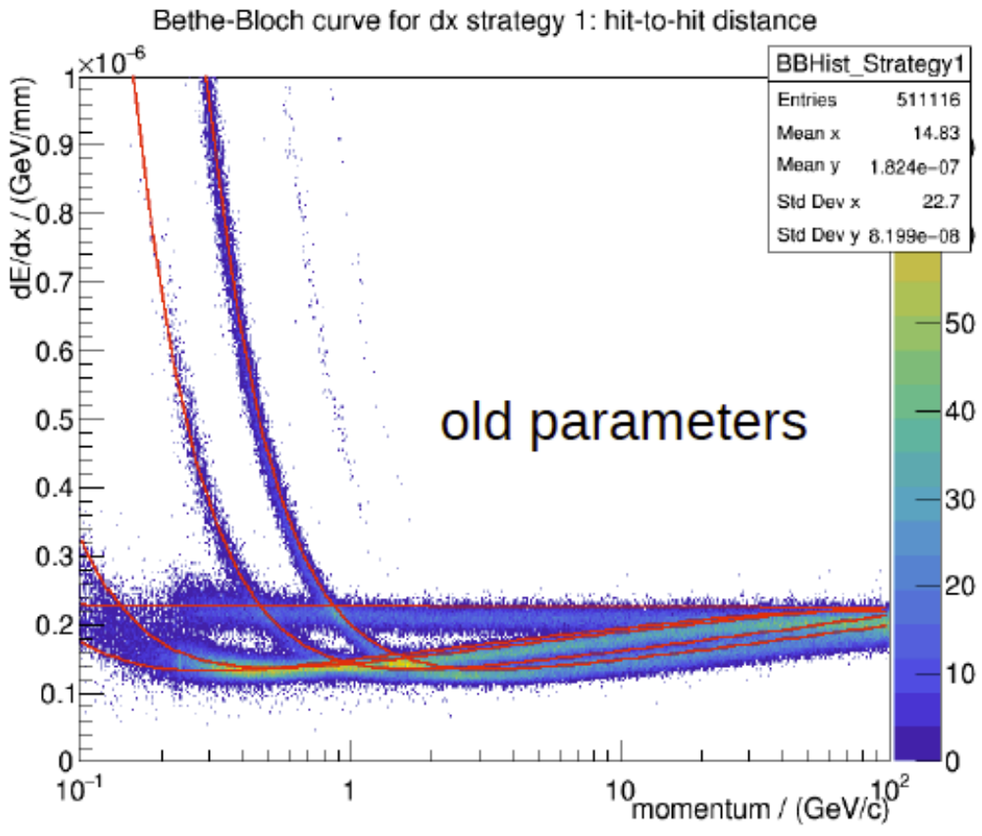
- develop plan for large scale production of pair-bg files
- suggest to drop particles w/ E_kin<2MeV to significantly save CPU time

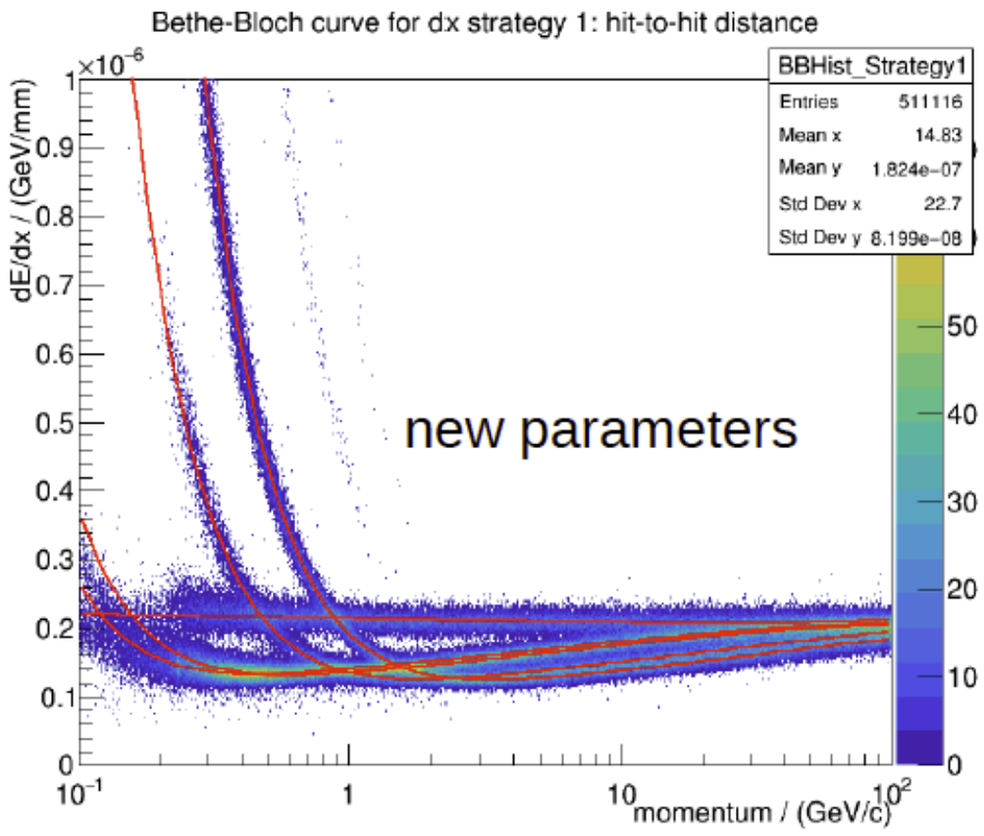
Reconstruction

U.Einhaus

investigate issue recently reported by A.Irles:

- Likely cause: not-up-to-date parametrisation of Bethe-Bloch curve of expected dE/dx values in dE/dx-PID (inside LikelihoodPIDProcessor)
- Proposed solution: Get new parameters by fitting to current MC-data
- Comparison of parameterised curves with MC-data

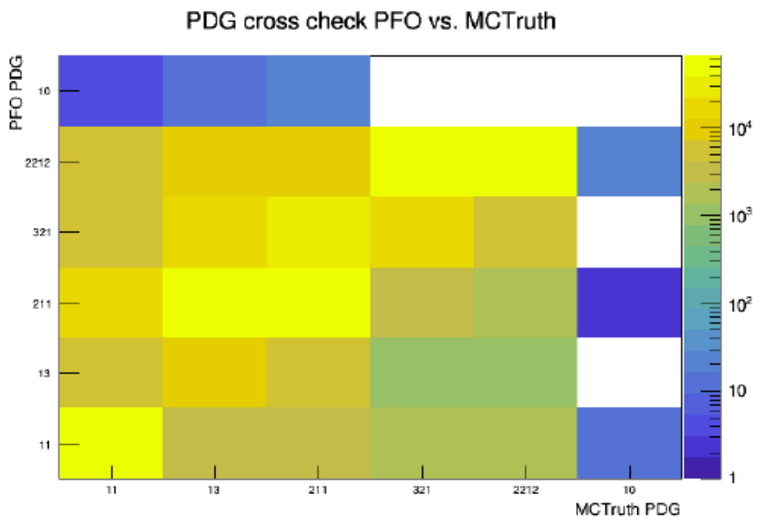


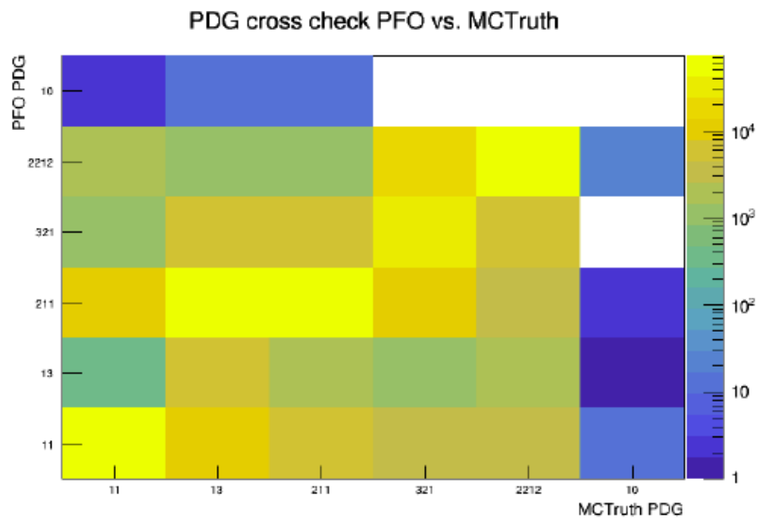


Reconstruction

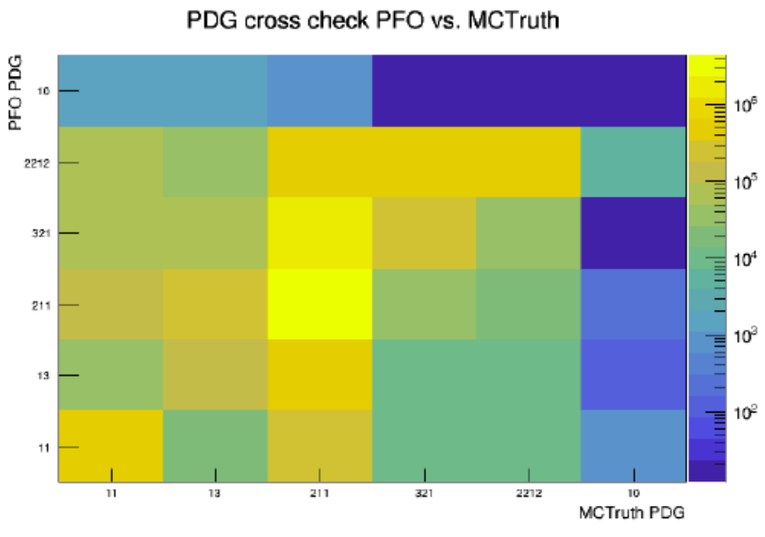
U.Einhaus

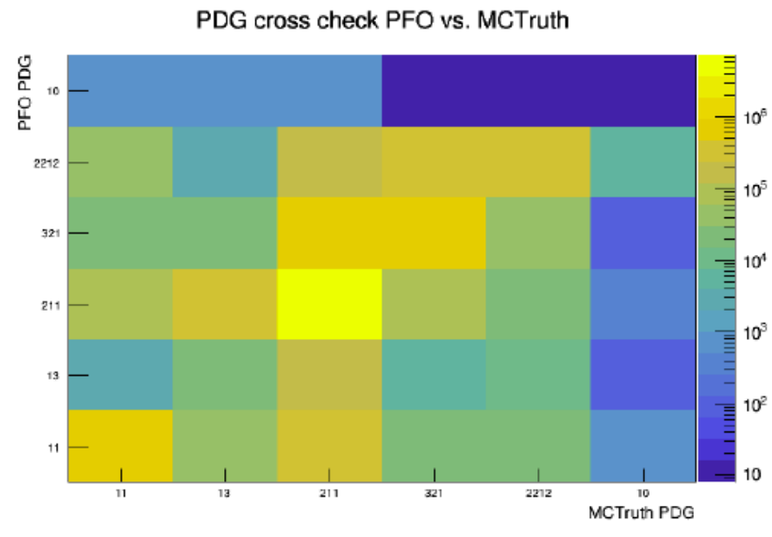
observe improvement wrt to code in v02-00-02:





single particles





ttbar events

old **new**

Reconstruction

U.Einhaus

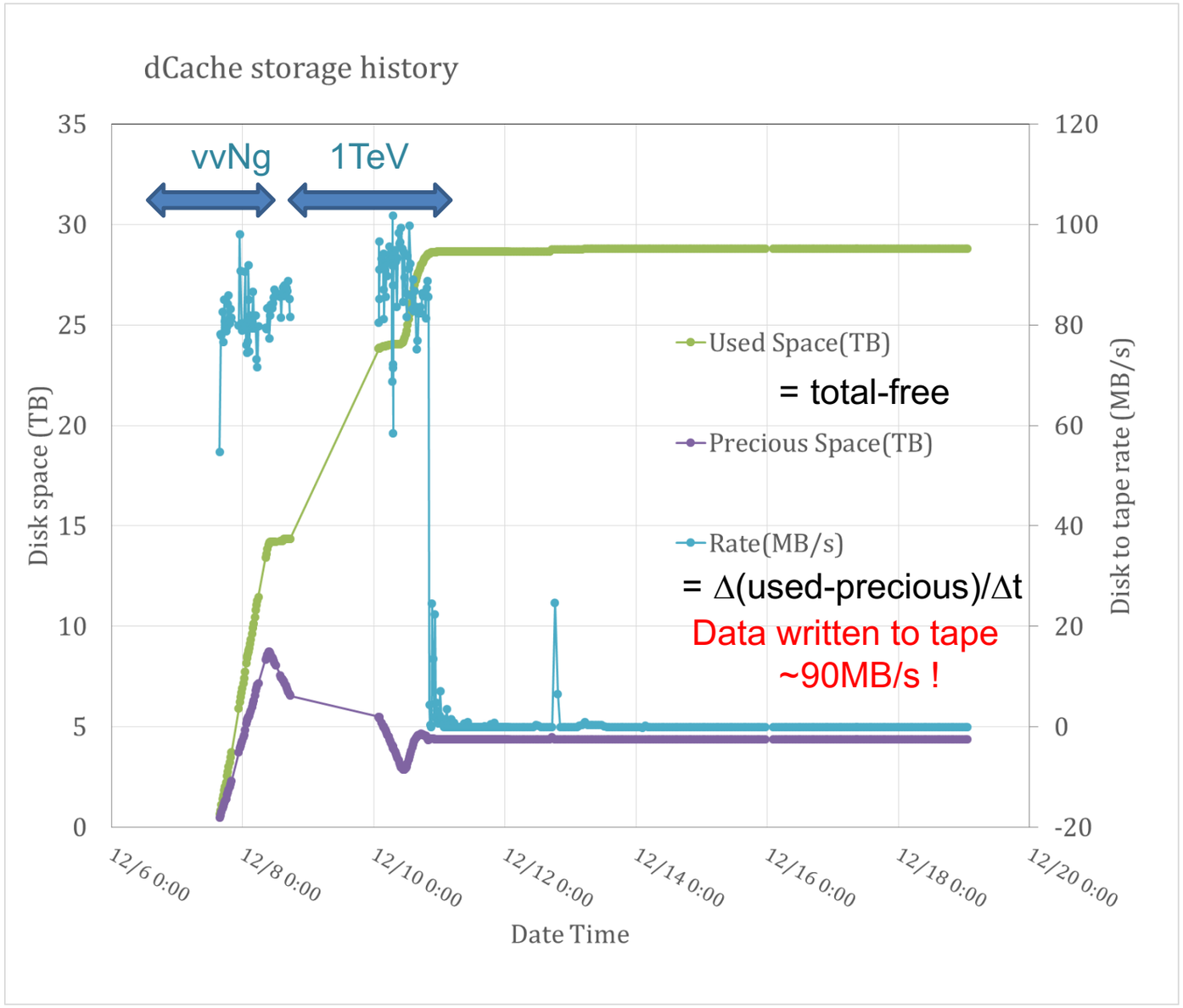
- users will have to copy the PandoraPFO collection and run patched version of LikelihoodProcessor

- Uli has processor for copying the collection and steering file to rerun the PID

- will be made available on Github at **https://github.com/ILDAnaSoft**

Monte Carlo Production

A.Miyamoto



- investigated behaviour of DESY-Se w/ tape backend
- need to plan next production accordingly

Merry Christmas and a Happy New Year