

Intro and miscellanea

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Informal detector team meeting 20/03/2024

Changes to detector geometry

100	100		<constant name="Solenoid_inner_radius"	value="1500*mm"/>
101	-		<constant name="Solenoid_outer_radius"	value="1771*mm - env_safety"/>
102	-		<constant name="Solenoid_half_length"	value="2307*mm - env_safety"/>
103	-		<constant name="Solenoid_Coil_half_length"	value="2274*mm"/>
104	-		<constant name="Solenoid_Coil_radius"	value="1503*mm"/>
105	-			
106	-		<constant name="ECalBarrel_inner_radius"	value="1771*mm"/>
107	-		<constant name="ECalBarrel_outer_radius"	value="2038*mm"/>
108	-		<constant name="ECalBarrel_half_length"	value="2307*mm - env_safety"/>
	101	+	<constant name="Solenoid_outer_radius"	value="1856.7*mm"/>
	102	+	<constant name="Solenoid_half_length"	value="2307*mm"/>
	103	+	<constant name="Solenoid_Coil_half_length"	value="2277*mm"/>
	104	+	<constant name="Solenoid_Coil_radius"	value="1680*mm"/>
	105	+		
	106	+	<constant name="ECalBarrel_inner_radius"	value="1857*mm"/>
	107	+	<constant name="ECalBarrel_outer_radius"	value="2124.5*mm"/>
	108	+	<constant name="ECalBarrel_half_length"	value="2307*mm"/>

Larry noticed a mismatch between the coil radius and its intended position within the solenoid volume.

- Fixed in revised geometry. Unclear if it had an effect on the simulation.
- Took chance to push also Aluminum vacuum tank instead of steel.

See [diff](#) for details. Cross-check geometry dimensions [here](#)

New docker image / datasets

Please update!

Reminder: instructions at [Google doc](#)

`docker://madbaron/k4test-ubuntu:latest`

The new Image includes:

- Updated geometry
- Updated calo cell selector (now allows for subtracting the mode of the BIB independently of applying any threshold)

In the process of updating the datasets on snowmass to the new geometry:

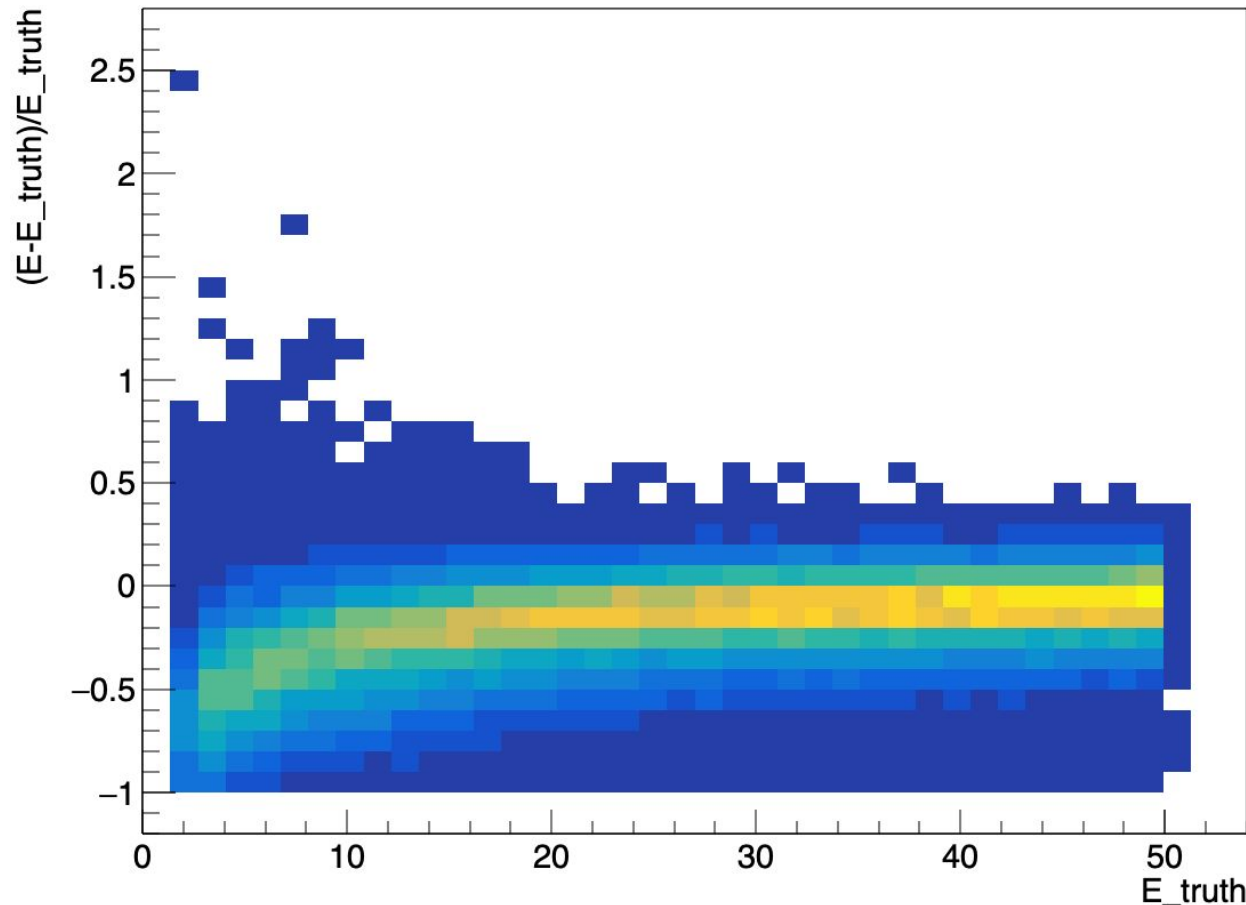
Done:

- muonGun_pT_0_50
- photonGun_E_0_50, 50_250, 250_1000
- neutronGun_E_0_50, 50_250, 250_1000 (in transfer)

Calo reconstruction

Tried out a “cheater” reco on neutron gun samples:

- Sum up all cells in a cone of 0.4 around the truth MC particle
- Might extend to reco by picking the maxima in eta-phi as seeds for the cones



Thank you!

Links

Documentation

[Google doc with notes, list of tasks](#)

[Muon Collider Software Tutorial](#)

[Shared Overleaf](#)

[Key4Hep Documentation](#)

[LCIO Documentation](#)

Snowmass Connect Documentation

Data files: `/tank/data/snowmass21/muonc/fmeloni`

Communication channels:

#10tev-simulations channel on SCHEMA slack.

muoncollider-detector-physics@cern.ch IMCC eggroup for physics and detector