

Physics Analysis update

CALICE CIEMAT meeting

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17/04/20

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10k events single π^+ full iLCSoft simulation

- π^+ gun with the following energies 40 GeV, 60 GeV and **80 GeV cpu limit reached, running again to confirm.**
- Some technical details:
 - iLCSoft v02-00-01
 - The default sequences used for simulation where used StandardConfig/production/ddsim_steer.py Tunned to fit a random-gun as input.
 - The reconstruction step was done with Marlin by default but changing the default AHCAL for our SDHCAL specified with the `--compactFile` flag

```
ILD/compact/ILD_15_v02/ILD_15_v02.xml
```

```
carrillo@gaeuical1:~/ilcsoft/full_chain/ILDConfig-02-00-02/StandardConfig/production> $cat ddsim_40.txt
ddsim --outputFile=./pi_40MeV_100evt_SIM.slcio --compactFile $lcgeo_DIR/ILD/compact/ILD_15_v02/ILD_15_v02.xml --steer
gFile=ddsim_steer_40.py --enableGun --gun.particle pi+ --gun.energy 40*GeV --gun.distribution uniform --numberOfEvent
1000
```

```
carrillo@gaeuical1:~/ilcsoft/full_chain/ILDConfig-02-00-02/StandardConfig/production> $cat marlin_40.txt
Marlin MarlinStdReco.xml --constant.lcgeo_DIR=$lcgeo_DIR --constant.DetectorModel=ILD_15_o2_v02 --constant.OutputBase
ame=pi_40MeV_100evt --global.LCIOInputFiles=pi_40MeV_100evt_SIM.slcio
```

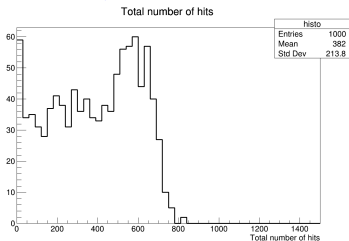
```
carrillo@gaeuical1:~/ilcsoft/full_chain/ILDConfig-02-00-02/StandardConfig/production> $
```

- The considered energy values were 40 GeV, 60 GeV and 80 GeV with 10kEvent each.
- The datasets are available here:

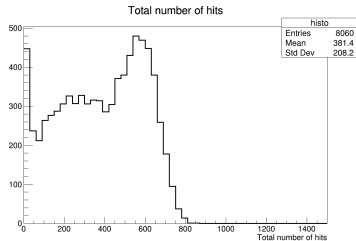
`/pool/calice3/data/MonteCarlo/pion_gun_ilcsoft/`

random flat gun, fixed energy Total Number of hits

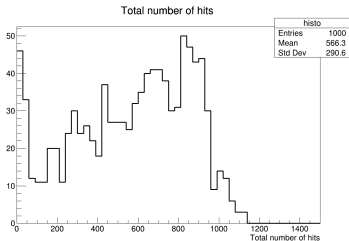
π^+ 40 GeV, 1kEvent



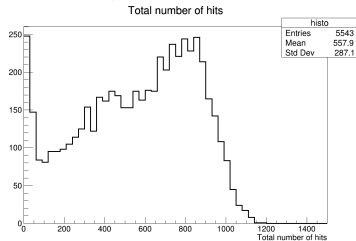
π^+ 40 GeV, 10kEvent



π^+ 60 GeV, 1kEvent



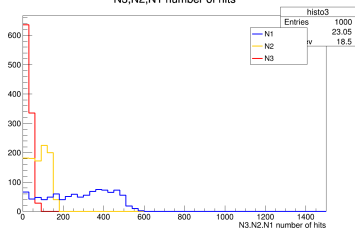
π^+ 60 GeV, 10kEvent



random flat gun, fixed energy Number of hits by thershold

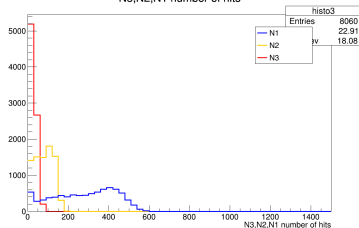
$\pi^+ 40 GeV, 1kEvent$

N3,N2,N1 number of hits



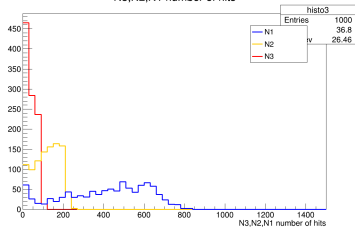
$\pi^+ 40 GeV, 10kEvent$

N3,N2,N1 number of hits



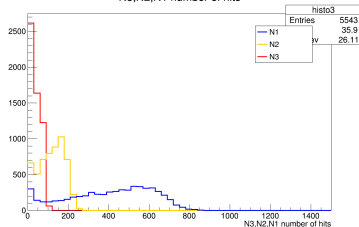
$\pi^+ 60 GeV, 1kEvent$

N3,N2,N1 number of hits



$\pi^+ 60 GeV, 10kEvent$

N3,N2,N1 number of hits



Choosing a physics channel

- Should we stick to the $H \rightarrow c\bar{c}$ Analysis?
- Or we look for a simpler AHCAL analysis to be repeated with SDHCAL as Imad suggests?
- All Higgs branching ratios summarized in attached paper. To the agenda.
- Any clear reference paper? As far as I remember Gerald will come with a list of analysis next week?
- $H \rightarrow \tau\tau$ Daniel Jeans. https://agenda.linearcollider.org/event/7371/contributions/37895/attachments/30993/46405/LCWS16_higgscp.pdf
- All analysis <https://confluence.desy.de/display/ILD/ILD+Physics+Working+group>

Backup

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