

# **CEPC Group Meeting**

14/06/2019

**LICH**

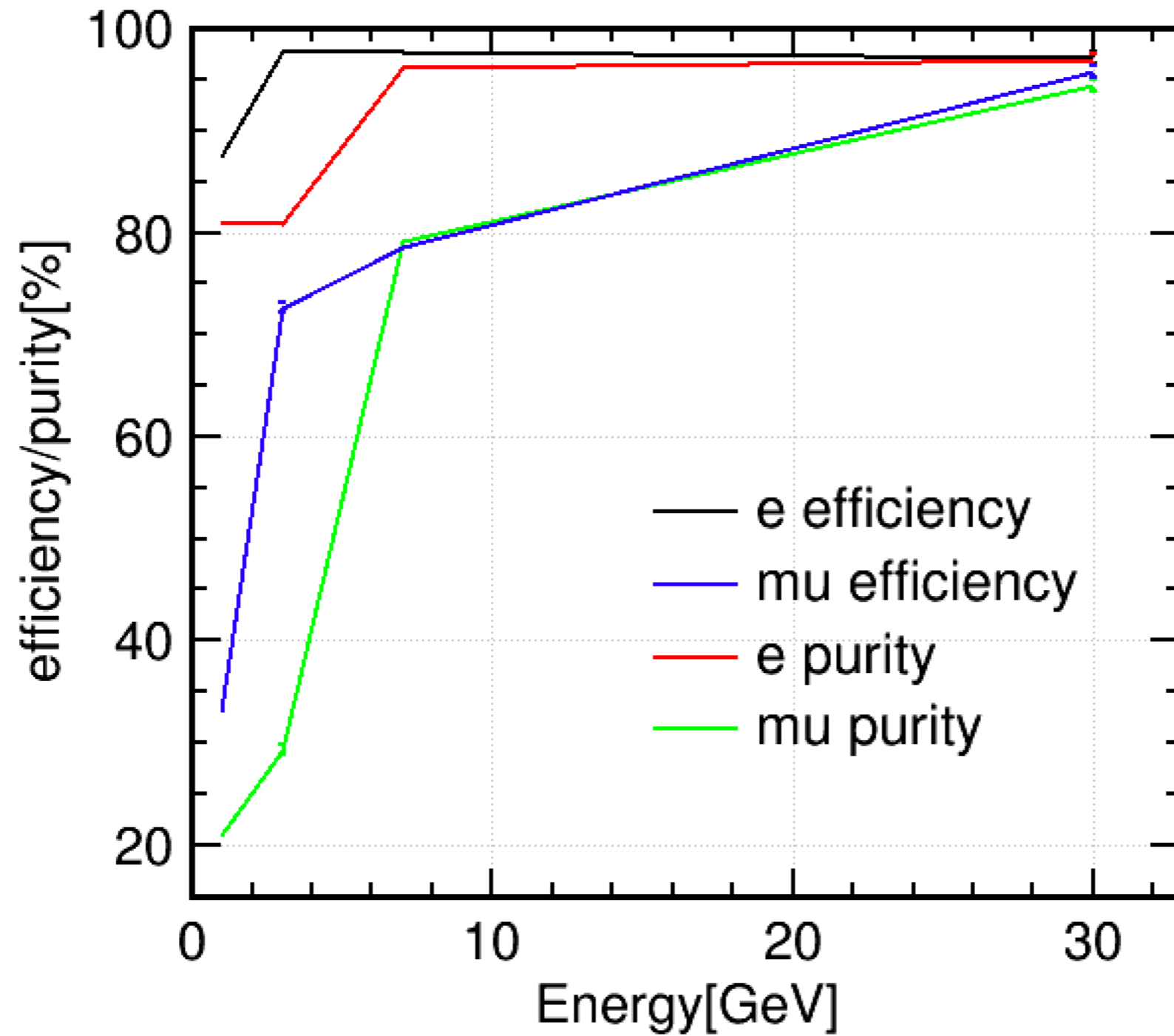
# Previous results

	>10GeV	5-10GeV	2-5GeV	<2GeV
eff_mu(%)	82.2±3.3	69.8±2.6	60.85±2.2	50.3±1.8
pur_mu(%)	95.3±2.7	94.4±2.6	20.74±1.2	9.15±0.5
eff_e(%)	92.7±2.7	98.2±2.4	97.5±1.6	95.9±1.1
pur_e(%)	93.5±2.7	80.9±2.6	91.1±1.2	79.9±0.5
muons	1490	1321	1938	3006
electrons	1449	1614	3595	7821
pions	9667	25260	60935	108979

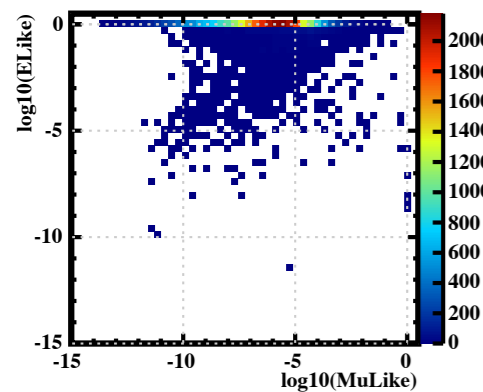
# Zpole->bb

	<2GeV	2GeV-4GeV	4GeV-10GeV	>10GeV
eff_e(%)	87.51	97.75	97.62	97.04
eff_mu(%)	33.17	72.63	78.47	95.69
pur_e(%)	80.97	80.79	96.07	96.91
pur_mu(%)	20.85	29.32	79.04	94.42
N_e	263449	84782	66514	30528
N_mu	128336	57777	60810	34178
N_pi	3888694	1436396	852860	112739

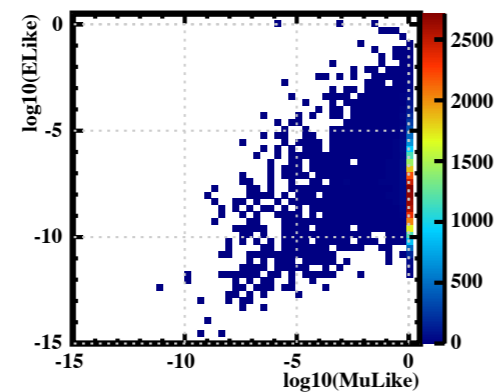
# Zpole->bb



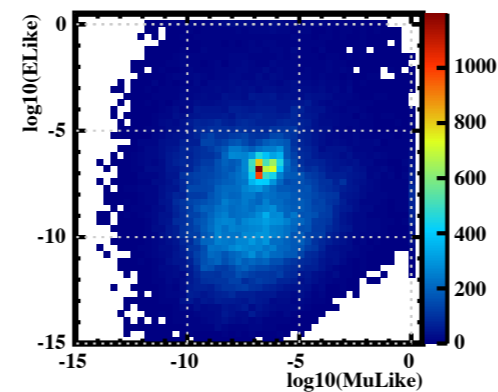
Electron (En&gt;10GeV)



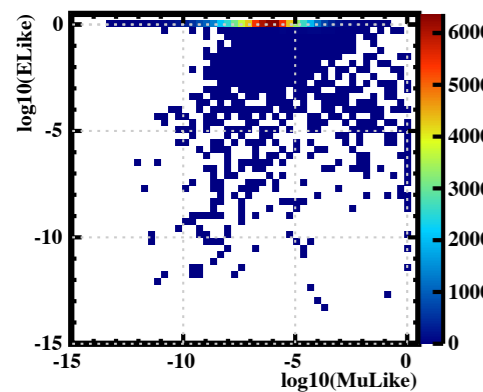
Muon (En&gt;10GeV)



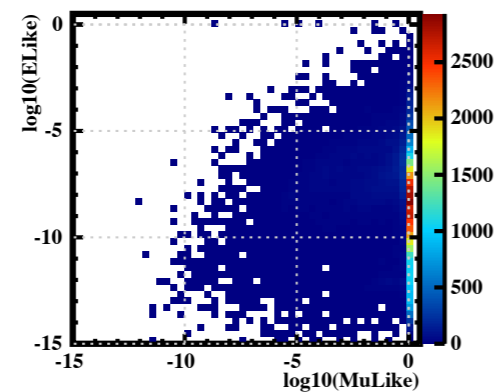
Pion (En&gt;10GeV)



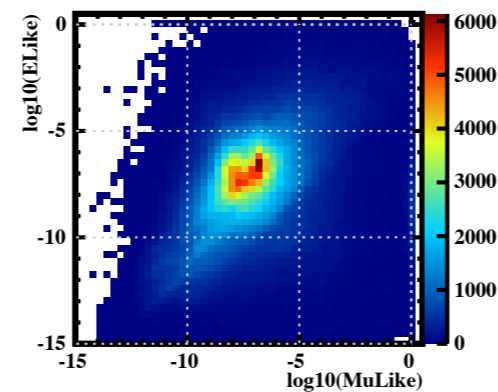
Electron (4GeV&lt;En&lt;10GeV)



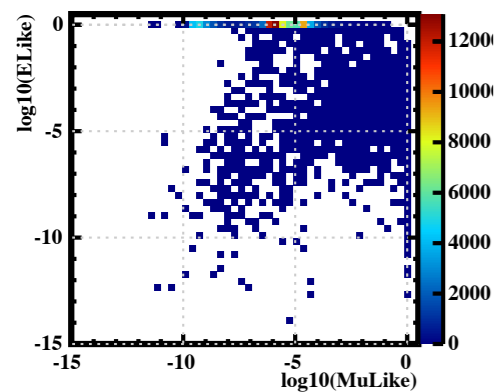
Muon (4GeV&lt;En&lt;10GeV)



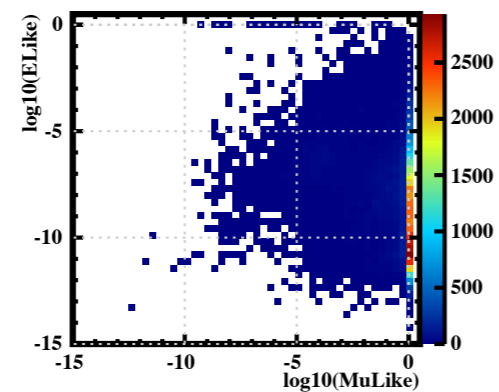
Pion (4GeV&lt;En&lt;10GeV)



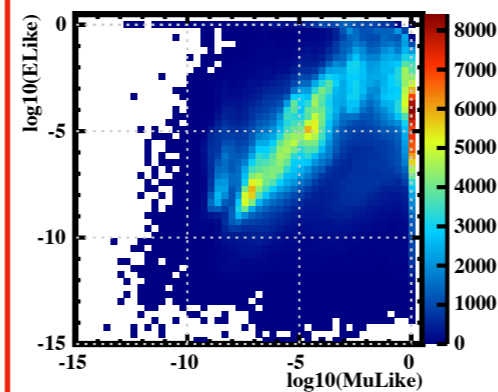
Electron (2GeV&lt;En&lt;4GeV)



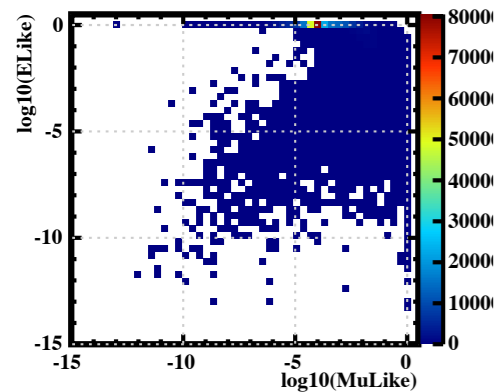
Muon (2GeV&lt;En&lt;4GeV)



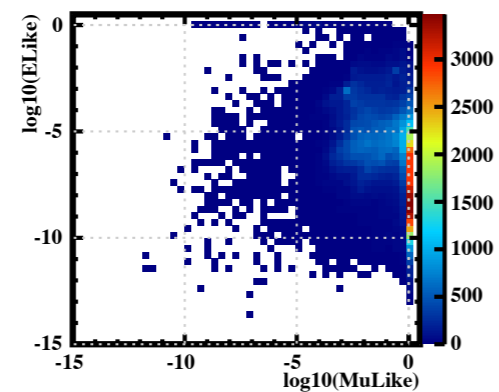
Pion (2GeV&lt;En&lt;4GeV)



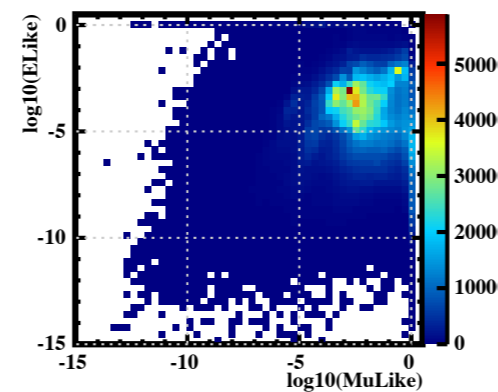
Electron (En&lt;2GeV)



Muon (En&lt;2GeV)



Pion (En&lt;2GeV)

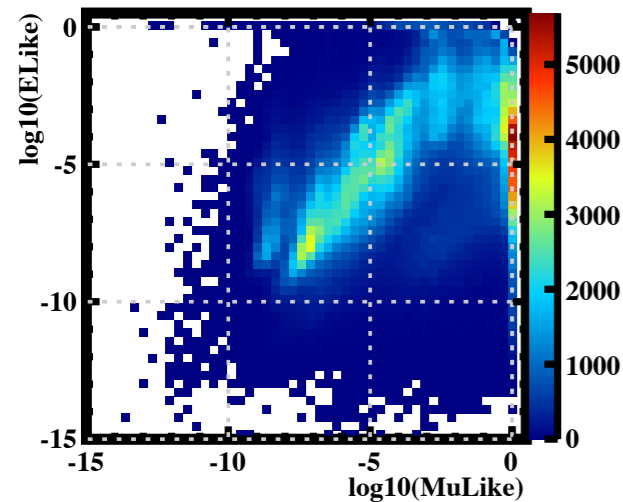


- Sample: Zpole->bb
- High Energy:
  - easy to separate
- Low Energy:
  - muons mixed with pions
  - large statistics of pions
- What is wrong with pion (2GeV - 4GeV)?

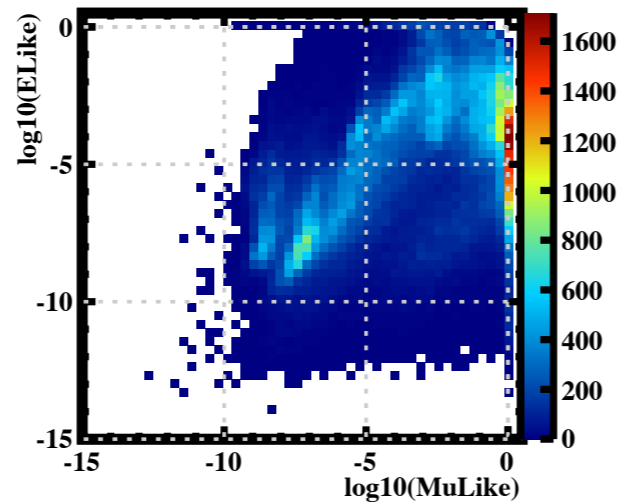
# Likelihood distribution

- The endcap is normal
- Training files smaller for low energy charged particles shooting to the barrels
- Low energy pions more likely to be looks like a muon

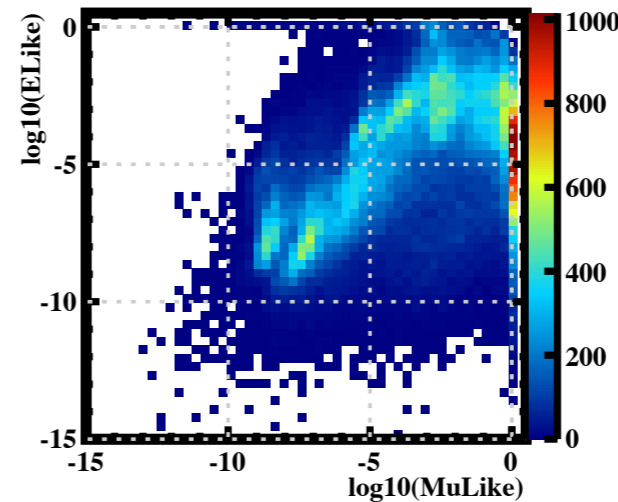
LowEn Pion (PFOcosTheta<0.3)



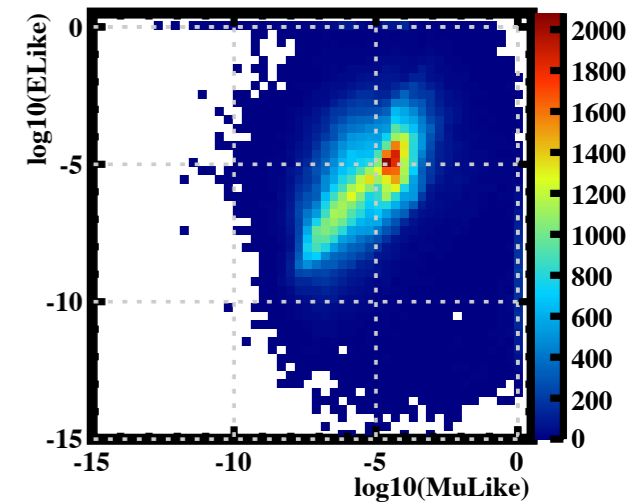
LowEn Pion (0.3<PFOcosTheta<0.6)



LowEn Pion (0.6<PFOcosTheta<0.8)



LowEn Pion (PFOcosTheta>0.8)



# Reminders

- **NO ArborPFOs PRODUCED IF NOT USING LICH!!!**
  - BushConnect reconstruct AncientPFOs
  - LICH ID them and produce ArborPFOs
- If links needs, apply the processor after LICH
- Ex: </afs/ihep.ac.cn/users/y/yudan/yudan/CEPC240/reco.xml>



# **Tau Decay Analysis**

# Zpole->tautau

	1- prong(l)	1- prong(h)	1prong + 1photon	1prong + 2photon	1prong + 3photon	1prong + 4photon	1prong + 5photon	3prong	3prong + 2photon
1- prong(l)	89.42	3.17	0.07	0	0	0	0	0.35	0
1- prong(h)	7.01	75.84	4.33	0.72	0.16	0.05	0	1.15	0
1prong + 2photon	1.43	0.80	25.52	52.83	2.97	0.19	0.01	0.04	1.59
1prong + 4photon	1.38	0.07	1.39	8.45	27.55	40.68	3.04	0	0.19
3prong	2.13	0.19	0.11	0.04	0	0	0	88.47	0.24
3prong + 2photon	1.81	0.08	0.06	0.23	0.08	0.02	0.01	1.08	64.03