Discussion on ttH→bb trigger

e author 1 or 3
e PT 25000
e eta 2.5
e isol 0.15
mu PT 20000
mu eta 2.5
mu chi2 30
mu isol 0.3
6 jets total
Jet ET 20000
Jet eta 5
4 “B” jets
B jet ET 20000
B jet eta 2.5
B weight -10

Had a very quick look at ttH semileptonic 5870 (positive lepton, 2500 events) and 5071 (negative lepton, 3500 events) AODs:

Events analyzed: 6000
Events preselected: 2878
Events preselected by:
electron pass = 1812
muon pass = 2301
jets pass = 4253

Passed each signature (incl.):

L1_XE100 : 1438 events
L1_EM25I : 2582 events
L1_EM60 : 3687 events
L1_MU20 : 647 events (*)
L1_MU40 : 2553 events (*)

L2_e25i : 1885 events
L2_e60 : 1093 events
L2_mu20i : 2445 events

EF_e25i : 1644 events
EF_e60 : 889 events
EF_mu20i : 2246 events

(*) L1 muon signatures are exclusive in release 12

Exclusive acceptance:

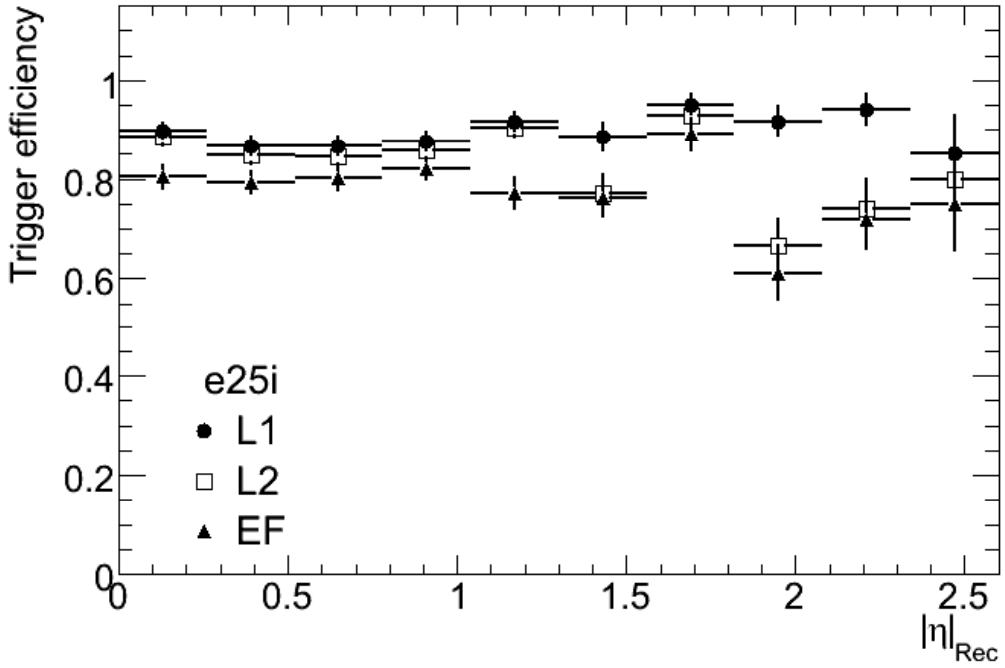
L1_XE100 : 66 events
L1_EM25I : 471 events
L1_EM60 : 422 events
L1_MU20 : 135 events (*)
L1_MU40 : 716 events (*)

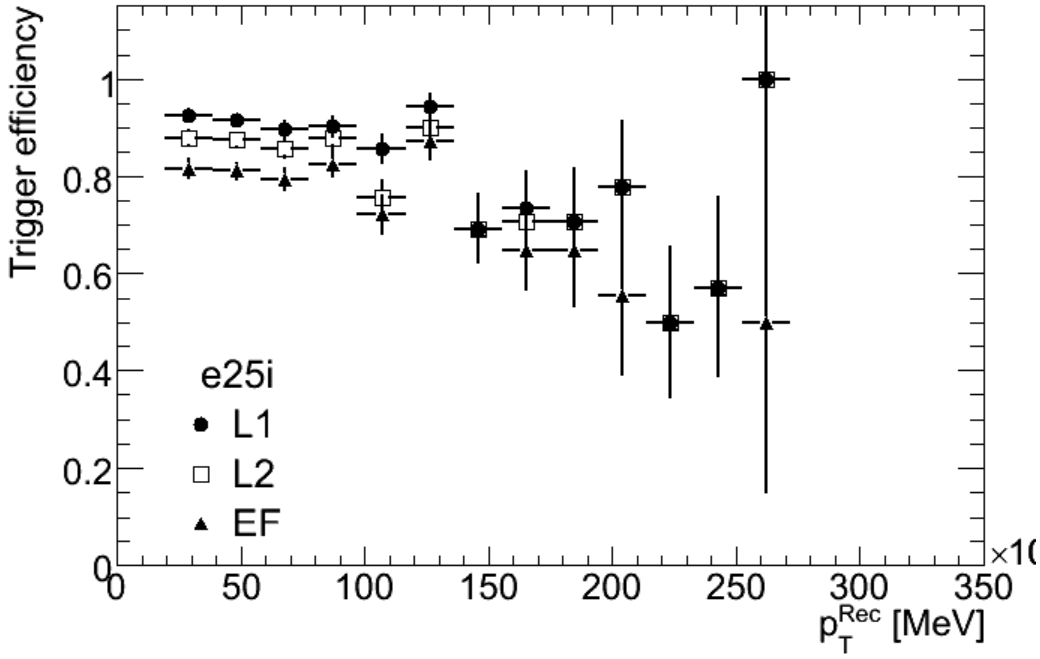
L1_XE100 : 391 events
L2_e25i : 785 events
L2_e60 : 133 events
L2_mu20i : 1443 events

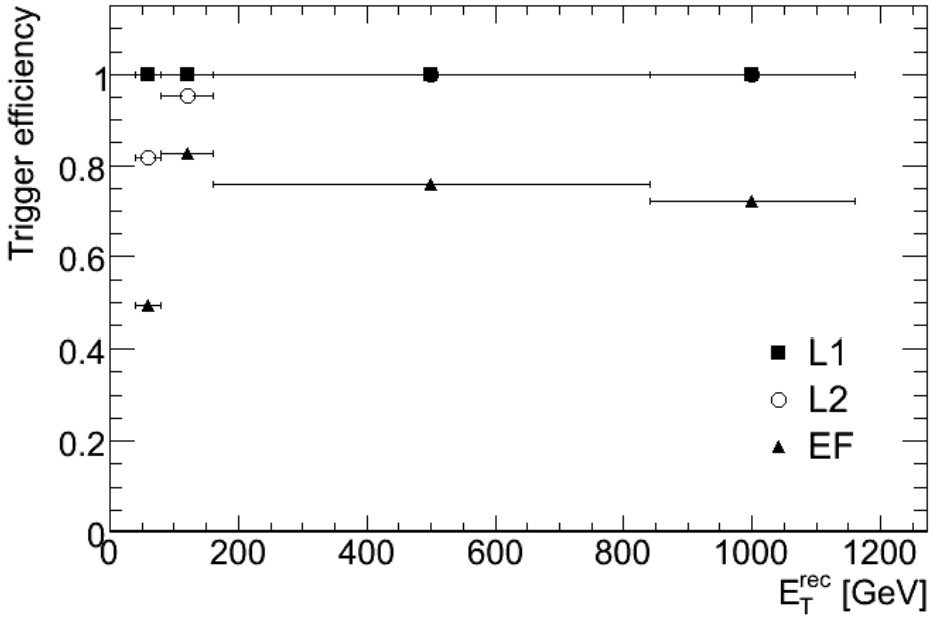
L1XE_100 : 480 events
EF_e25i : 728 events
EF_e60 : 103 events
EF_mu20i : 1359 events

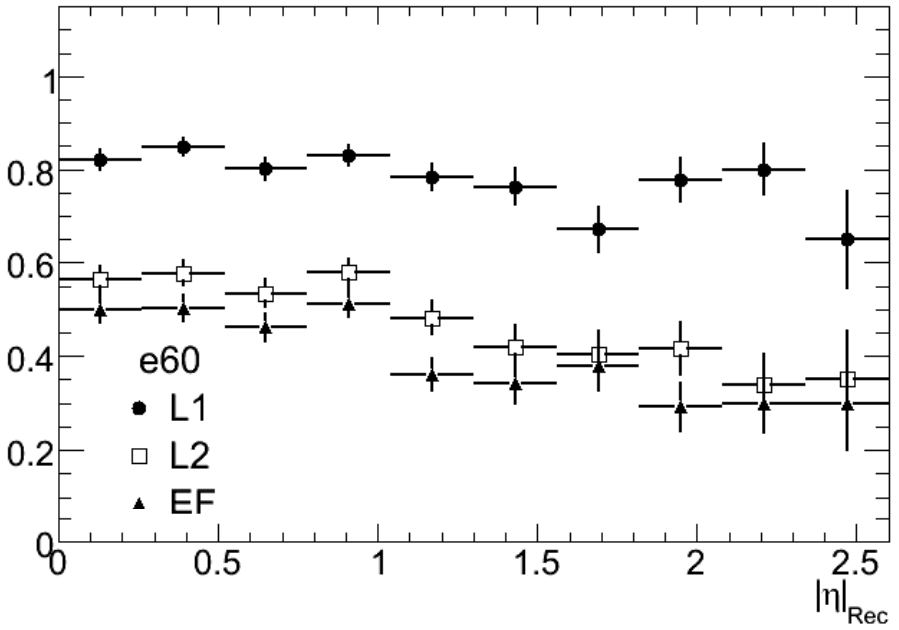
Level	e25i	e60	mu20	xe100	All (no XE)	All (with XE)
L1	52%	67%	52%	23%	97%	98%
L2	44%	27%	45%		89%	92%
EF	41%	23%	43%		84%	88%

- e25i
- Reasonably flat in eta: modulo sct bug and crack
- As expected, drop in efficiency vs pT for high pT due to isolation

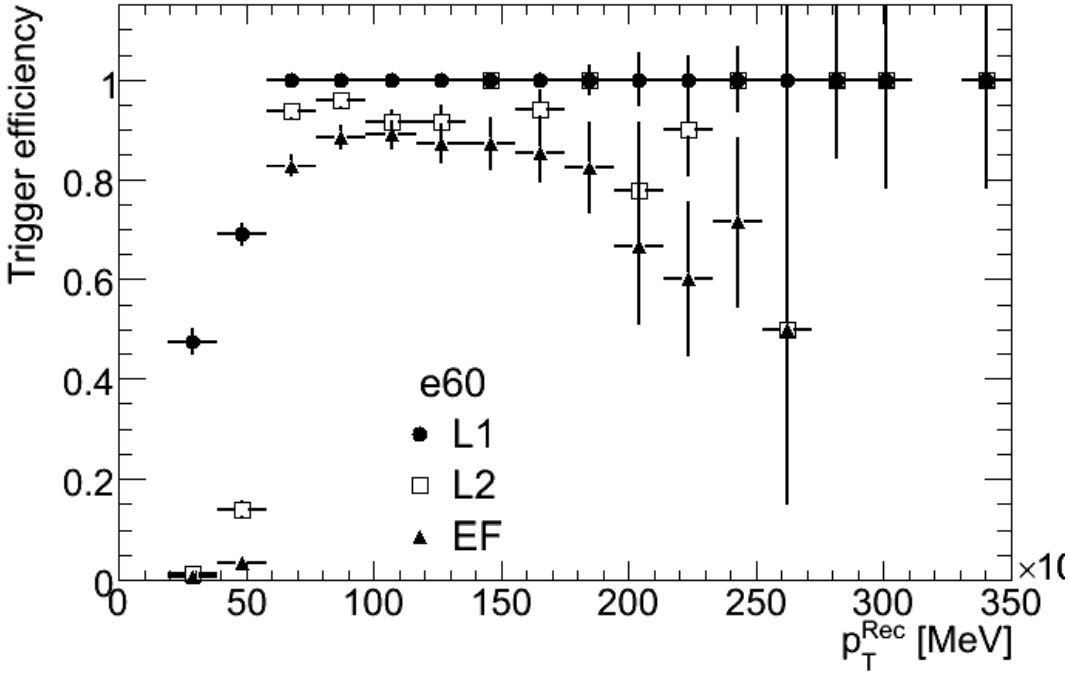








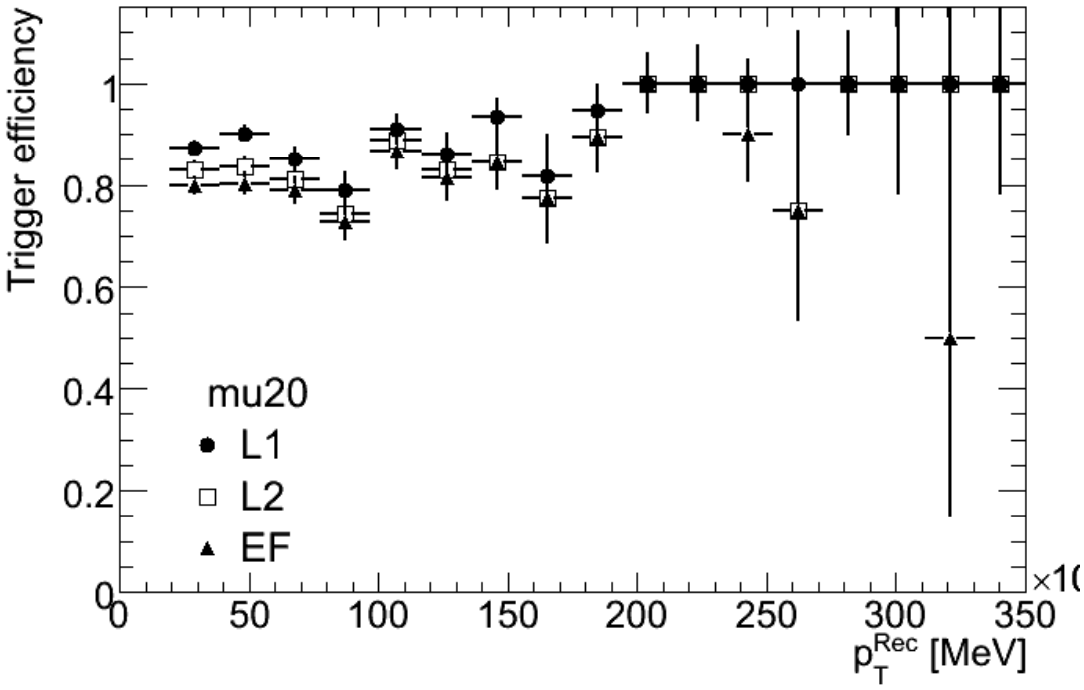
- e60
- Eta dependence not straightforward, probably affected by material distribution
- Still some efficiency drop at high pT from HLT cuts
- Probably recoverable

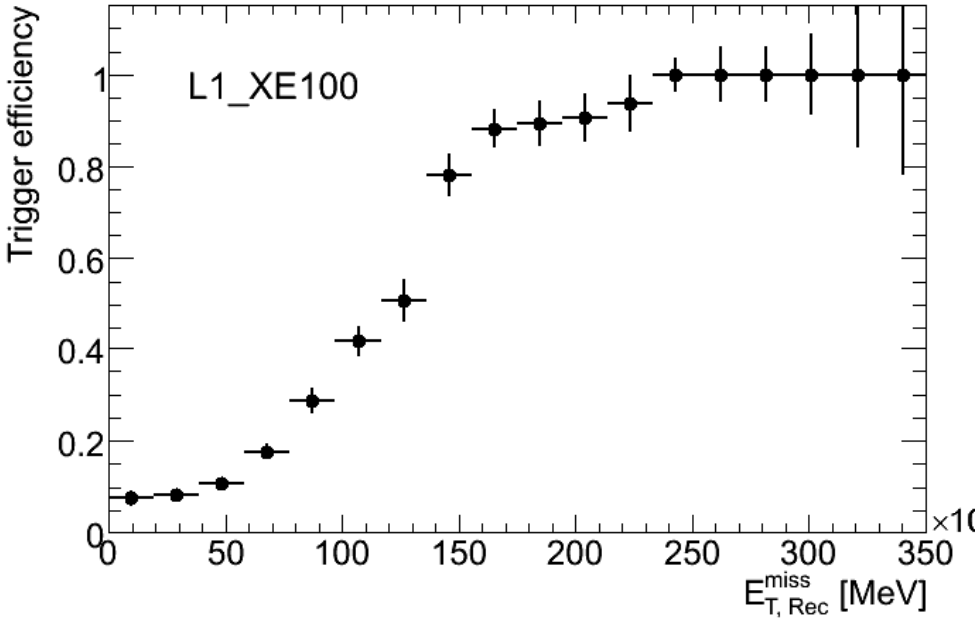


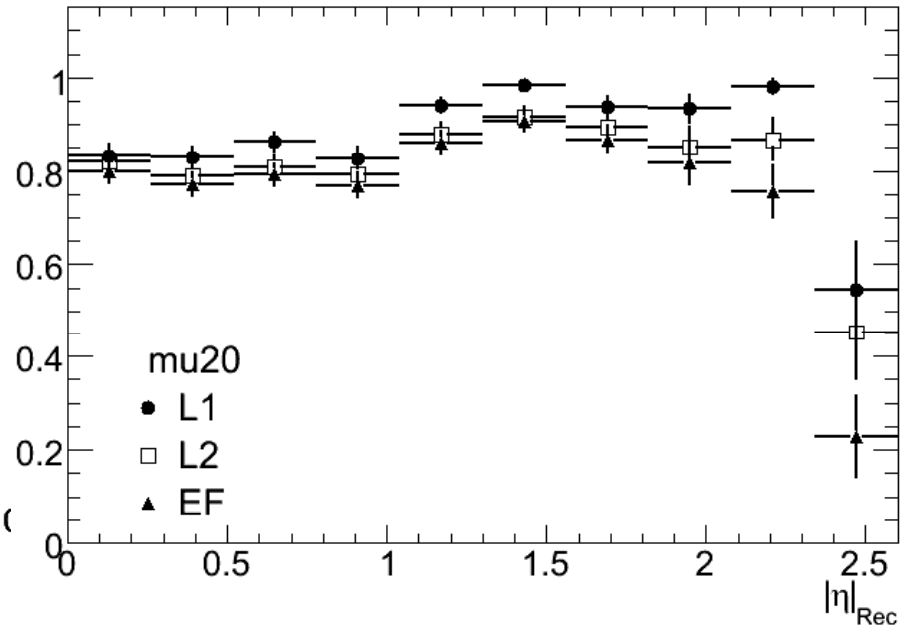
mu20i

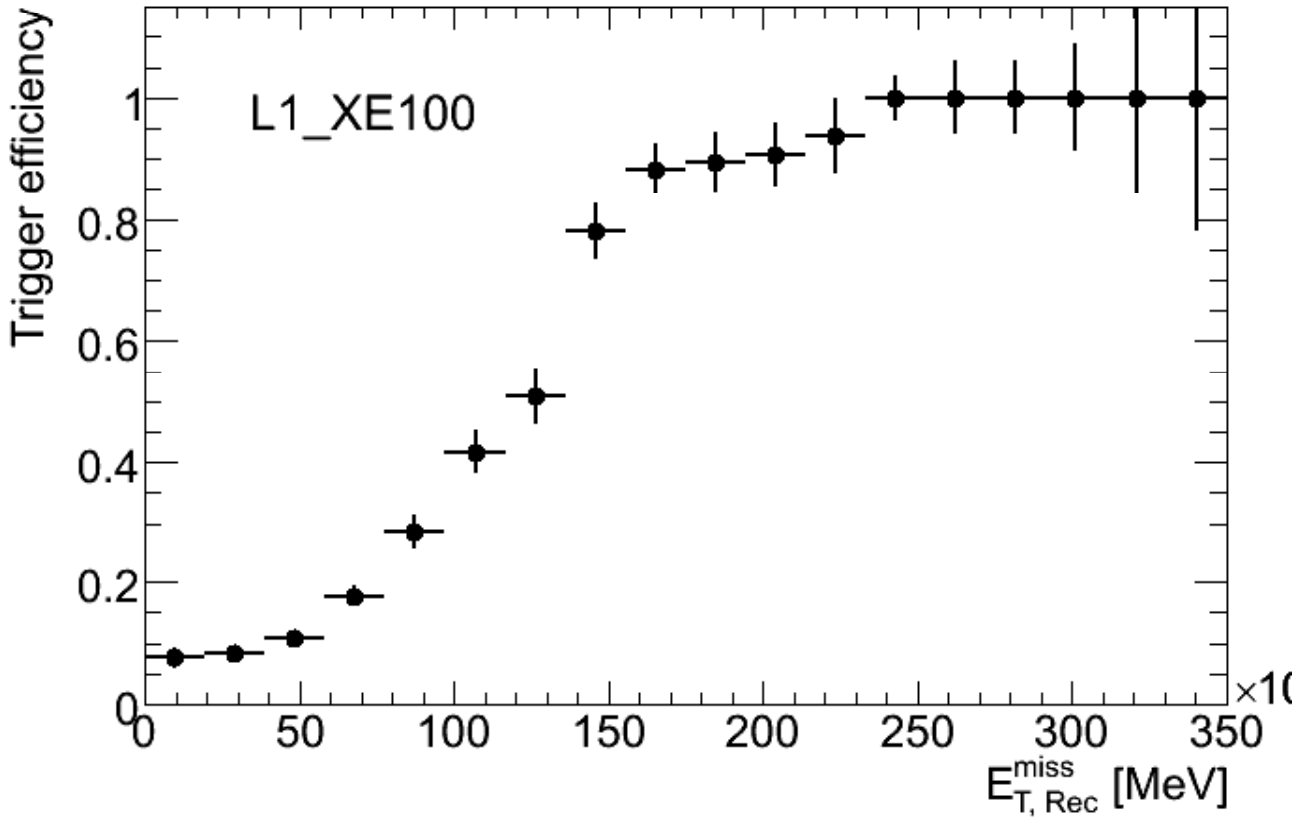
Actually, isolation only available in rel.13

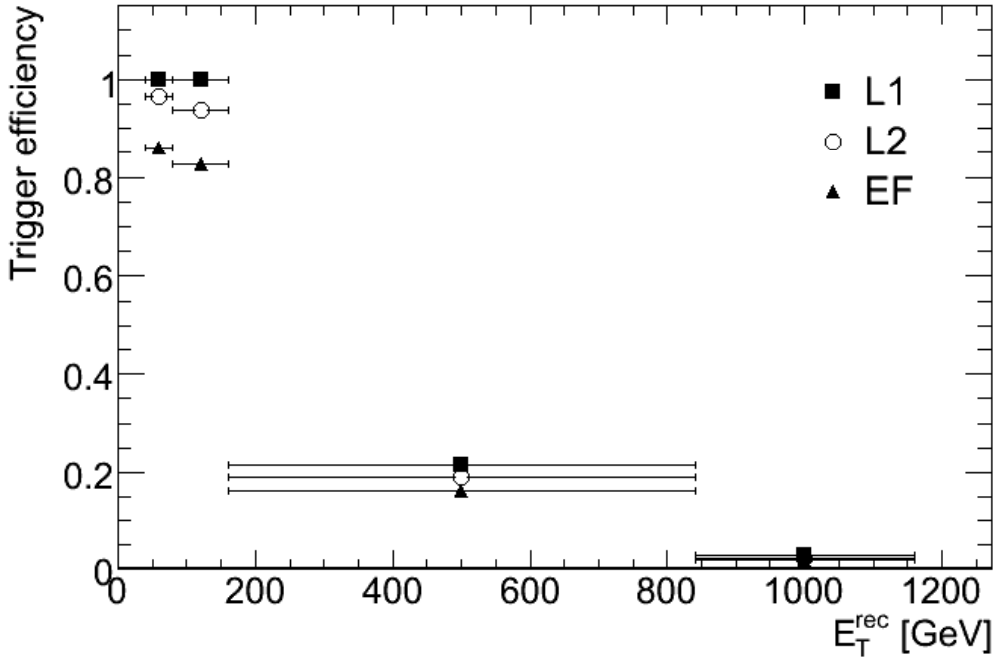
Xe100 seems to be useful…

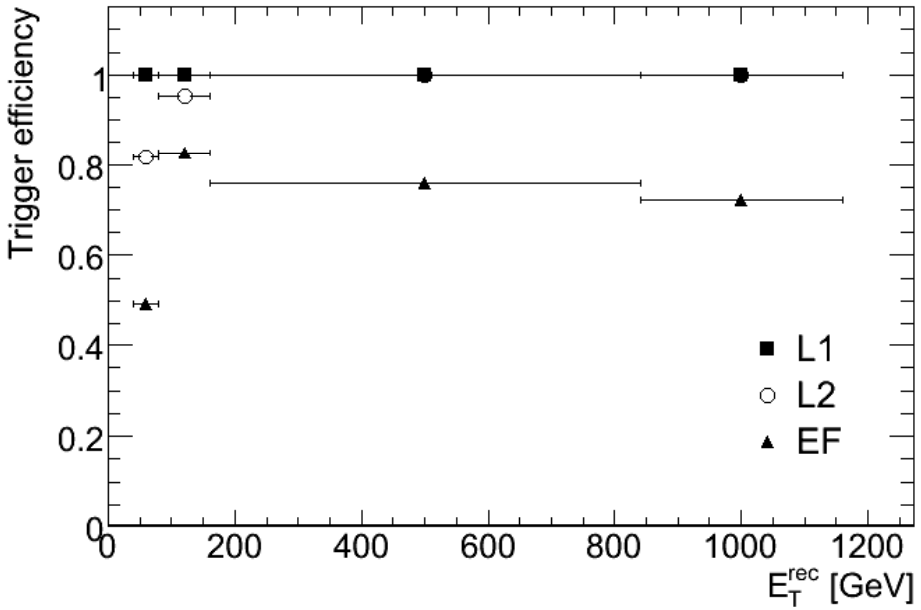







L1_XE100
Trigger efficiency
0
0.2
0.4
0.6
0.8
1
0
50
100
150
200
250
300
350
×10
$E^{miss}_{T,\,Rec}$ [MeV]


Trigger efficiency
L1
L2
EF
0
0.2
0.4
0.6
0.8
1
0
200
400
600
800
1000
1200
E_T^{rec} [GeV]


Trigger efficiency
L1
L2
EF
0
0.2
0.4
0.6
0.8
1
0
200
400
600
800
1000
1200
E_T^{rec} [GeV]