Status Report on Detector Performance Note

CLICdp Collaboration Meeting 2018

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(CERN)

Latest version on gitlab: all suggestions by the advisory committee implemented and committed into

https://gitlab.cern.ch/CLICdp/Publications/DraftDocuments/Note_DetectorPerformance

Physics Performance

Study many objects:

Tracking: impact parameter & p_T resolutions, efficiencies (with and without background)

Flavour tagging

Single particle peformance: Lepton identification with and without background

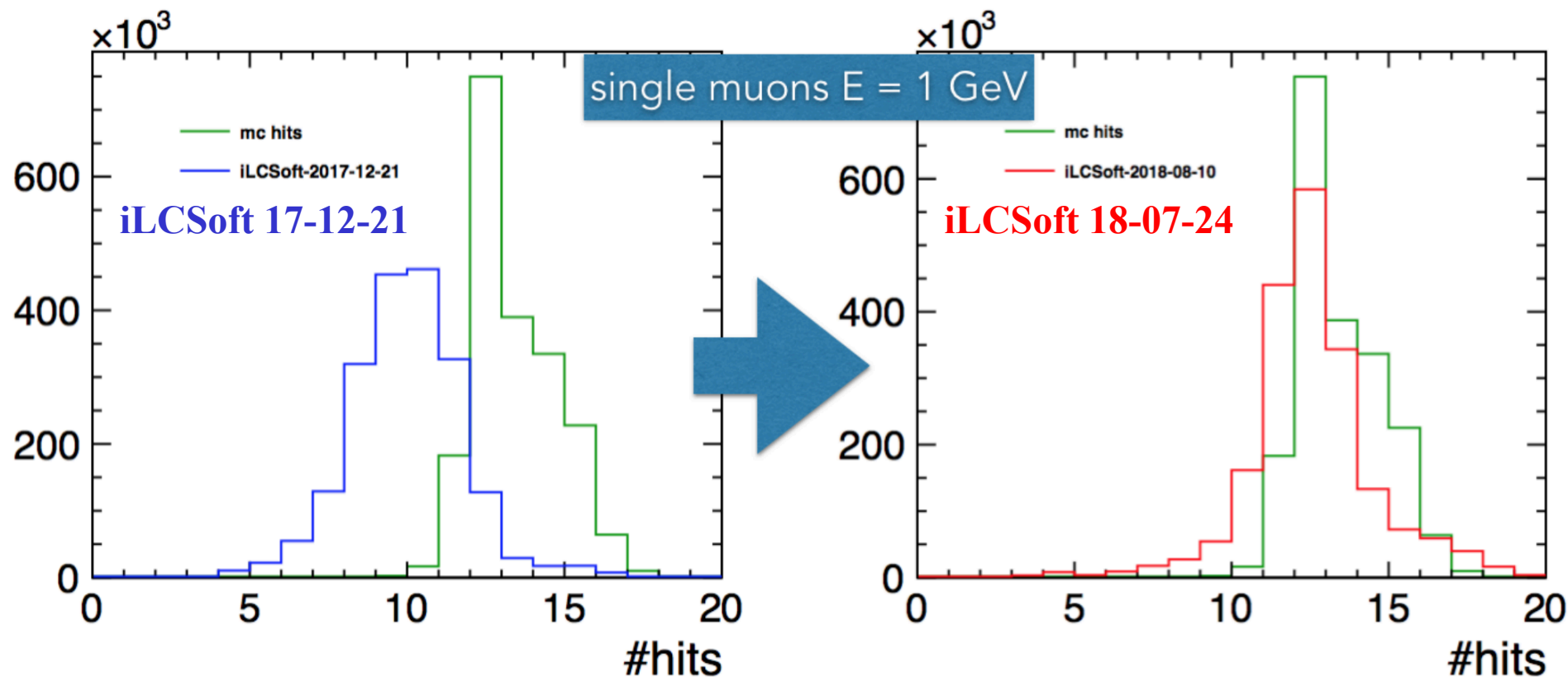**Electron Reconstruction in Lumi & BeamCal**

Jet Energy Resolution (without BG)

MET Resolution with and without BG

Lots of additional work: Prompt Tracks

All issues for prompt tracks (treatment of split and clone tracks) are resolved
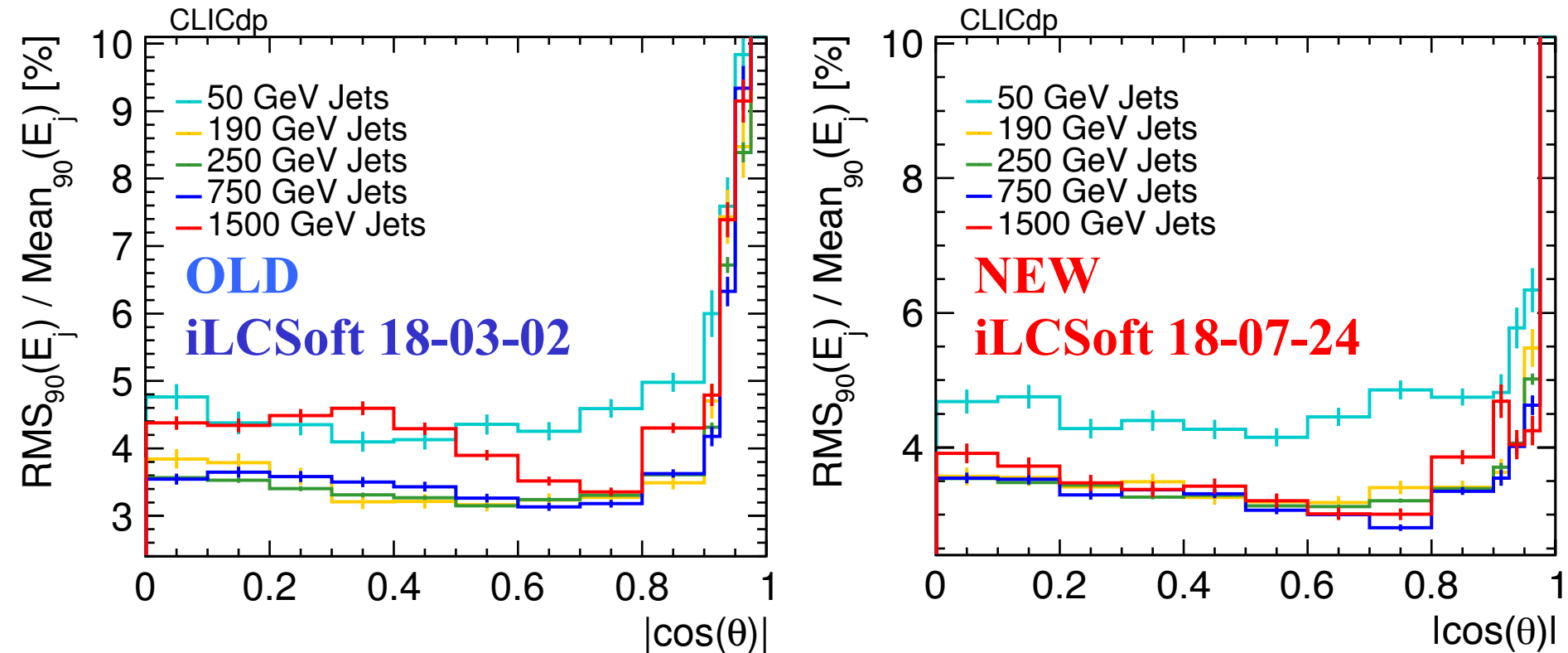→see Emilia's talk this morning in Software session

Excess tracks reduced for single muons from 5% down to 0.3 %, for bbar events from 25 % to 6 %

Big impact of tracking modifications on jet energy resolution

Clear improvement of jet energy resolution for high jet energies 4.5 % → 3.5-4 % due to track modifications

Significant improvement in jet energy resolution for forward jets (better tracking for boosted jets)

NEW: jets with background
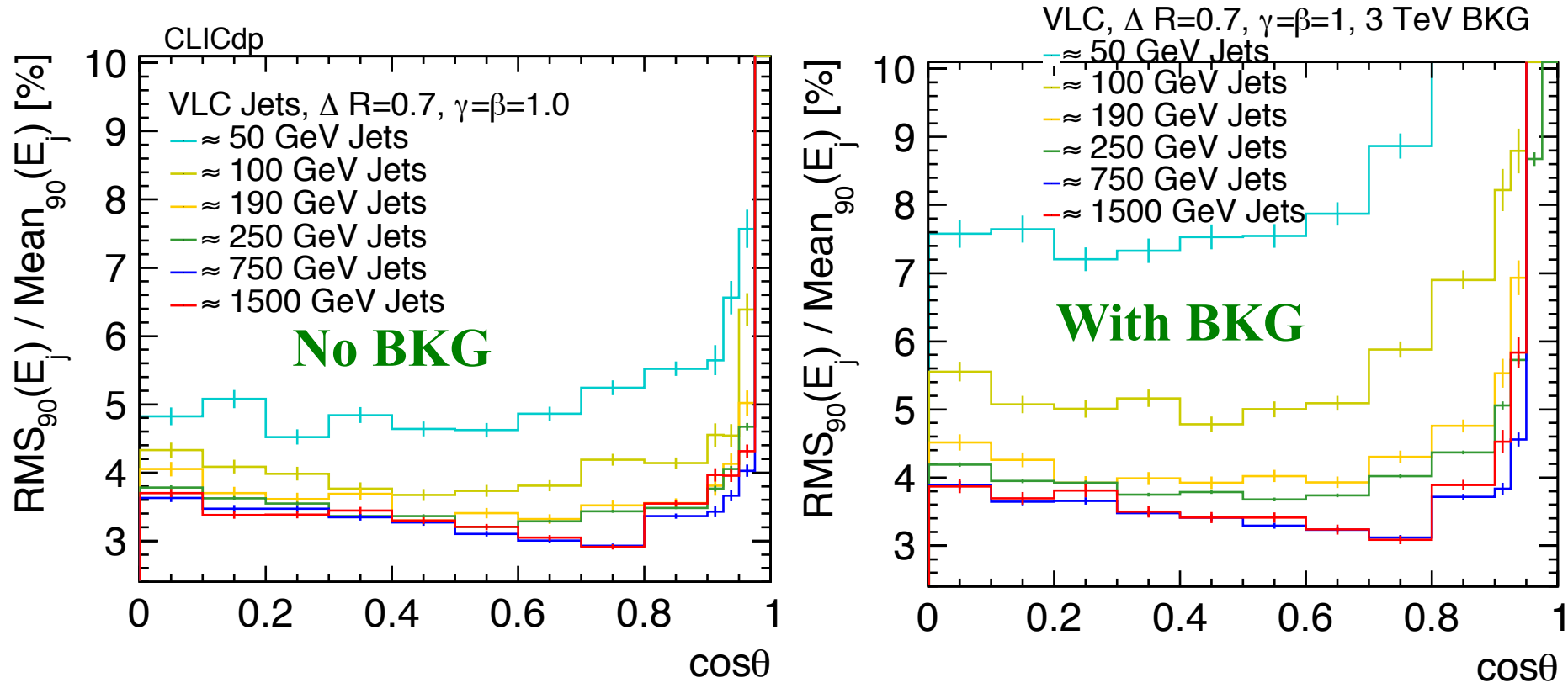
NEW: impact of γγ→hadrons on jet energy resolution (3TeV conditions)

→for 100 GeV increase from 4 % from 5-5.5% in barrel, 7 % in endcap)
At high energy mild increase, besides for very forward jets

Ongoing work

Work in progress: conformal tracking for displaced tracks →b-tagging
→see Emilia's talk this morning in Software session

Add W/Z mass separation plots

Add and discuss plots for first energy stage, including plots for beam background levels for 380 GeV machine
- Track efficiency plots for 380 GeV dijet events with and without BG
- Jet Energy resolution plots for various jet energies with 380 GeV BG levels
→ So far discussed impact of 3 TeV background levels only

Timeline for note:
Ready for **review by begin of November**
Plan to have **note out by 1ˢᵗ of December**

Should you feel something crucial is missing, please let us know in the coming days

BACKUP

Latest version on github: all suggestions by the advisory committee implemented and committed into

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