MET,HT and Meff

- MET=$\sqrt{{E_x}^2 + {E_y}^2}$

  → implemented with CORDIC

resource use [%]	latency [ns]
0.11	~50

- HT=Σp_T(jets) and Meff= Σp_T(jets,MET) with 64 jet TOBs

resource use [%]	latency [ns]
0.44	23.1

- all implementations on xc7vx690tffg1927-2

ϕ_{MET}

- $\phi_{\mathrm{MET}}=\arctan\left(\frac{E_x}{E_y}\right)$
  - CORDIC implementation (without format change)

resource use [%]	latency [ns]
0.12	17.2

  - use sign of Ex and Ey to calculate quadrant,
  - use relative size to calculate octant,
  - use $E_x > E_y \cdot$threshold (with 7 thresholds) to get 0.1 granularity

resource use [%]	DSP use [%]	latency [ns]
0.06	0.19	12.5

Transverse/Contratransverse Mass

- $M_T=\sqrt{2E_T MET(1-\cos(\Delta\phi))}$

  $\rightarrow M_T^2=2E_T MET(1-\cos(\Delta\phi))$

resource use [%]	DSP use [%]	latency [ns]
0.03	0.06	13.1

- $M_{CT}=\sqrt{2E_T MET(1+\cos(\Delta\phi))}$

  $\rightarrow M_{CT}^2=2E_T MET(1+\cos(\Delta\phi))$

resource use [%]	DSP use [%]	latency [ns]
0.02	0.06	12.5

Testimplementation with multiple algorithms

- maximum number of cluster TOBs
  - with sorting 6
  - with selection 6
- maximum number of jet TOBs
  - with sorting 10
  - with selection 10
- whole algorithm module has a latency of 3 BC
- currently reworking selection algorithm