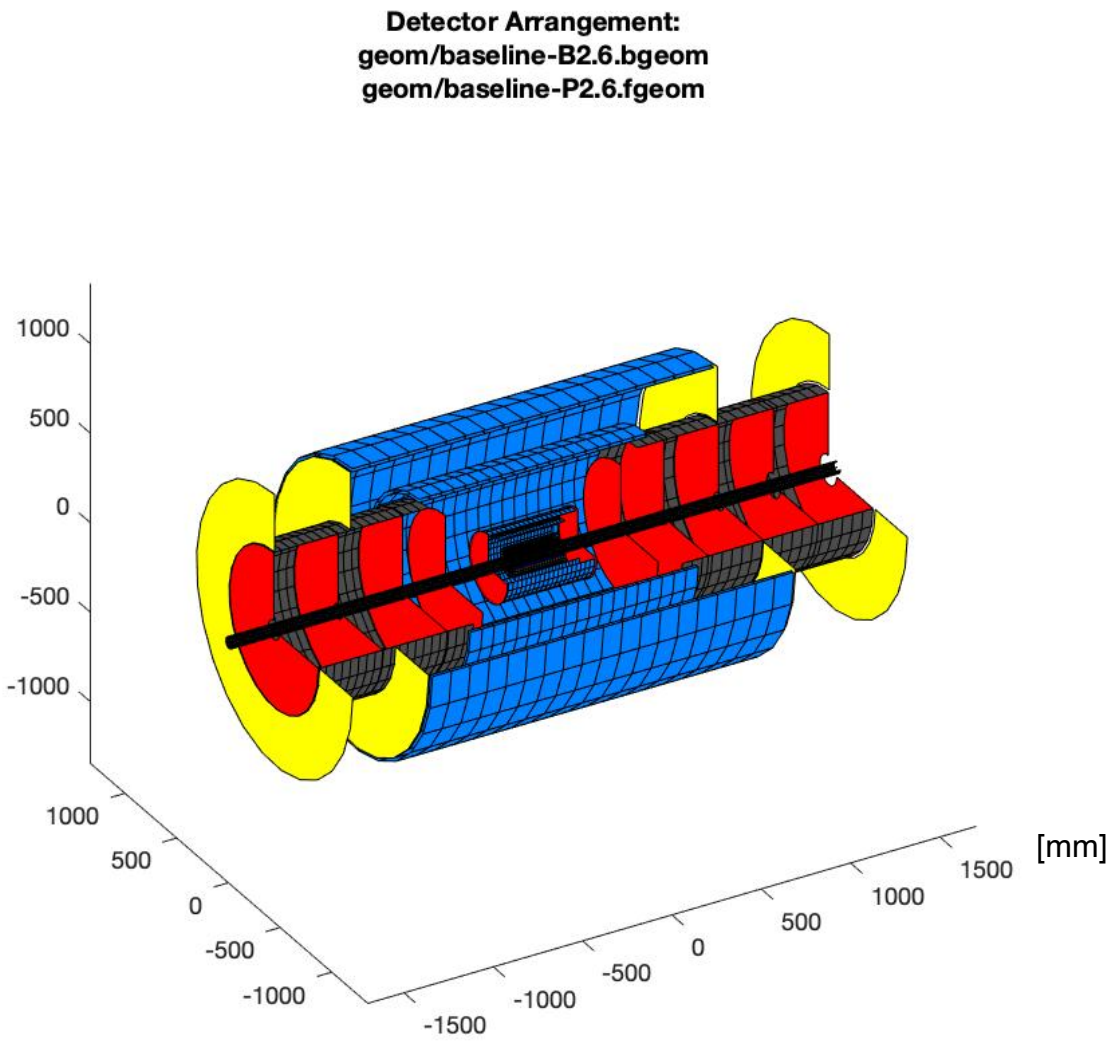
Baseline 2 – performance from fast simulations



Baseline 2 as of the ATHENA software meeting on Thursday, October 21,

Fast simulations performed with the latest baseline, including (passive) carbon fiber holding cylinder for innermost vertexing layers and service cylinders surrounding the disks,

Momentum values: 0.5, 0.6, …, 3, 4, …, 20, 25, …, 50, 60, …,100 GeV

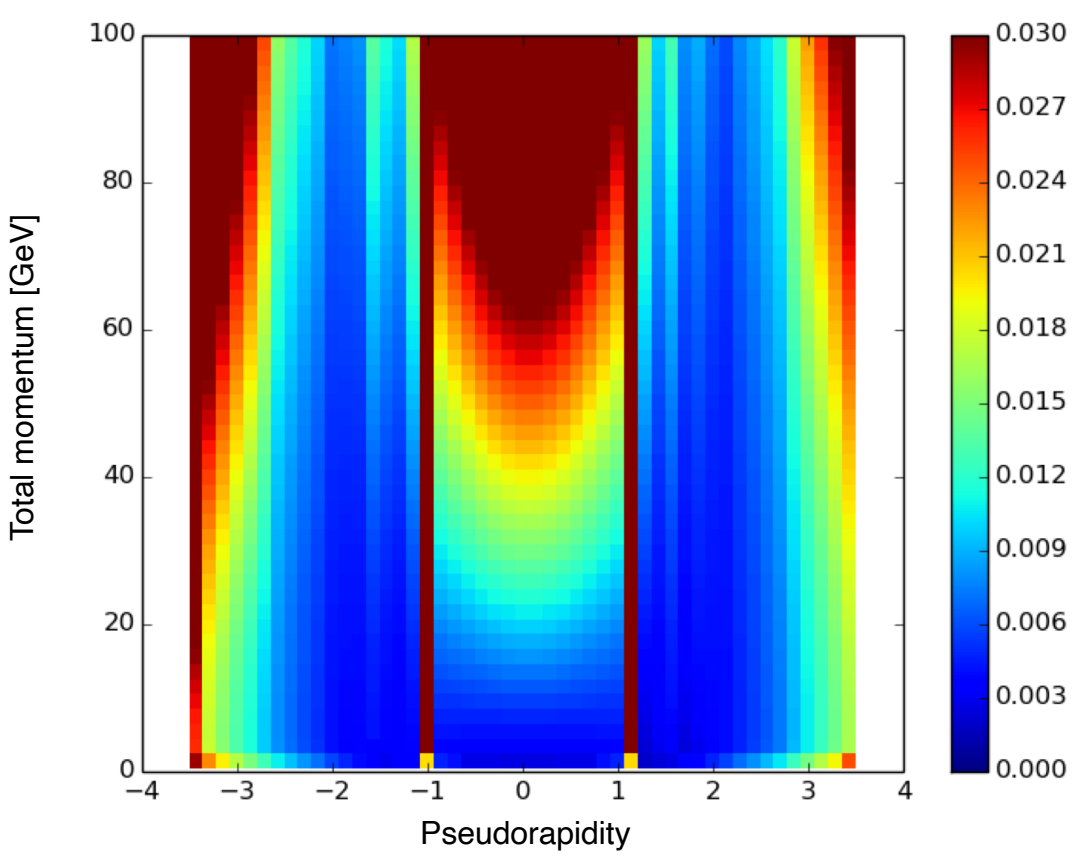
Pseudo-rapidity: -3.50, -3.45, …, 3.50

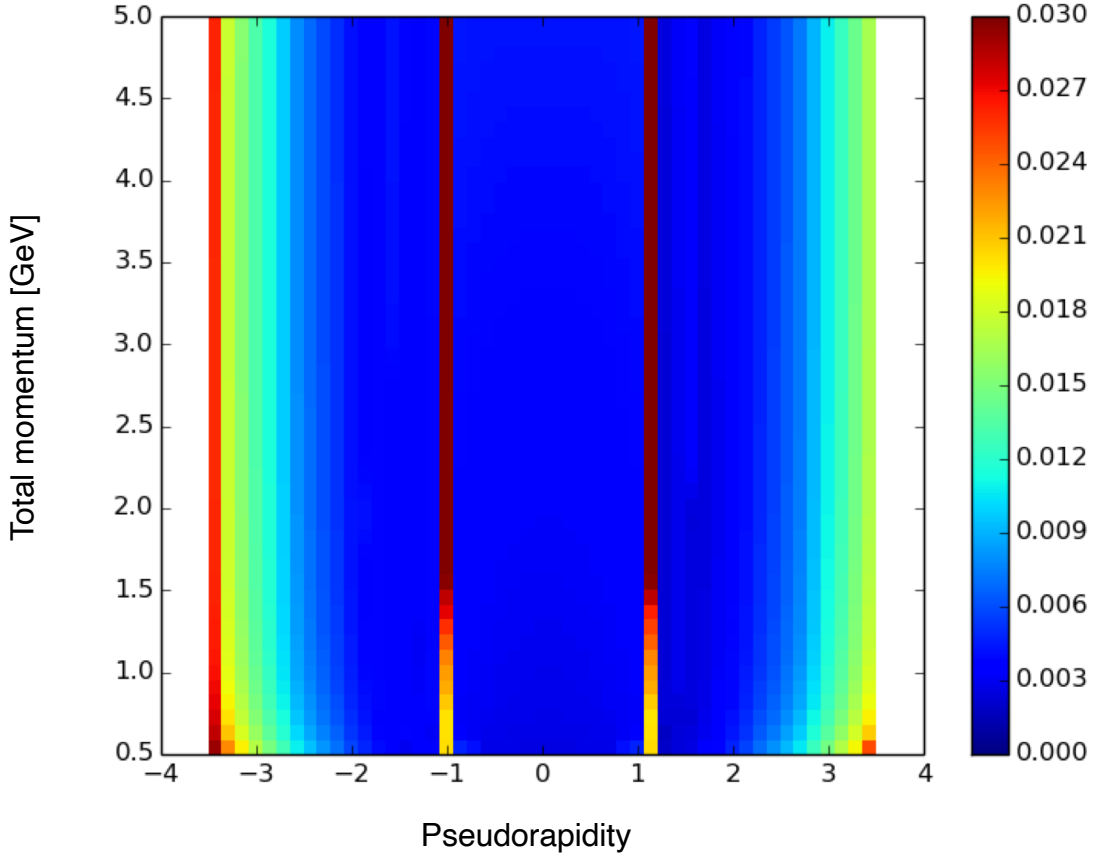
1000 events per point,

Simulations for z = 0, so far,

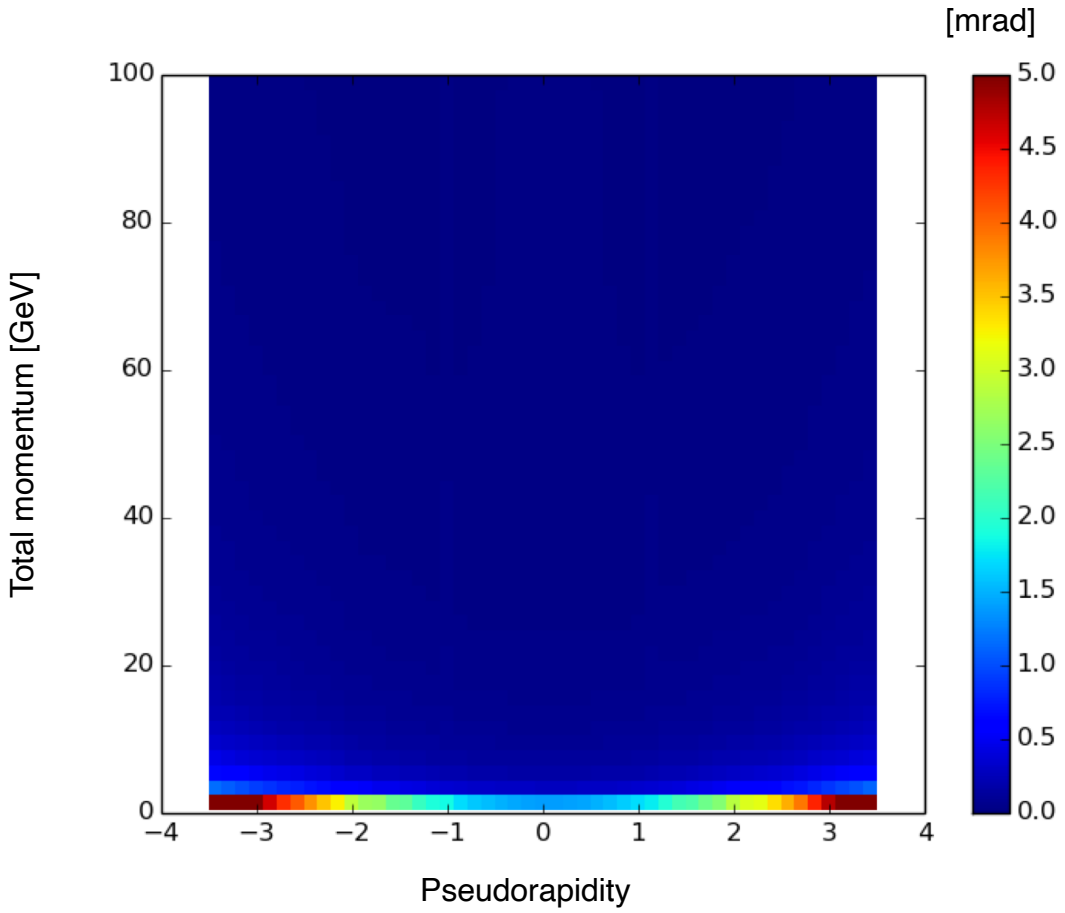
Performance made available to jet, heavy flavor, EW, and BSM WG as a lookup-table.

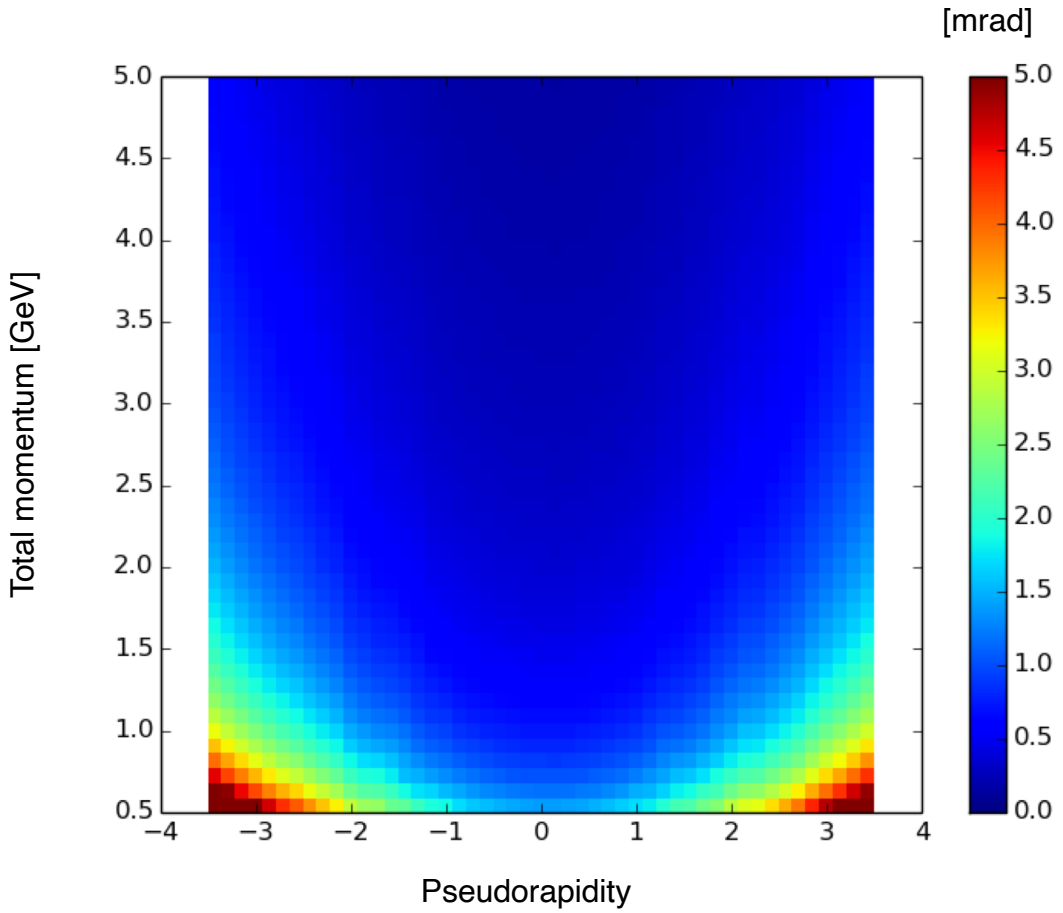
Baseline 2 – dp/p from fast simulations



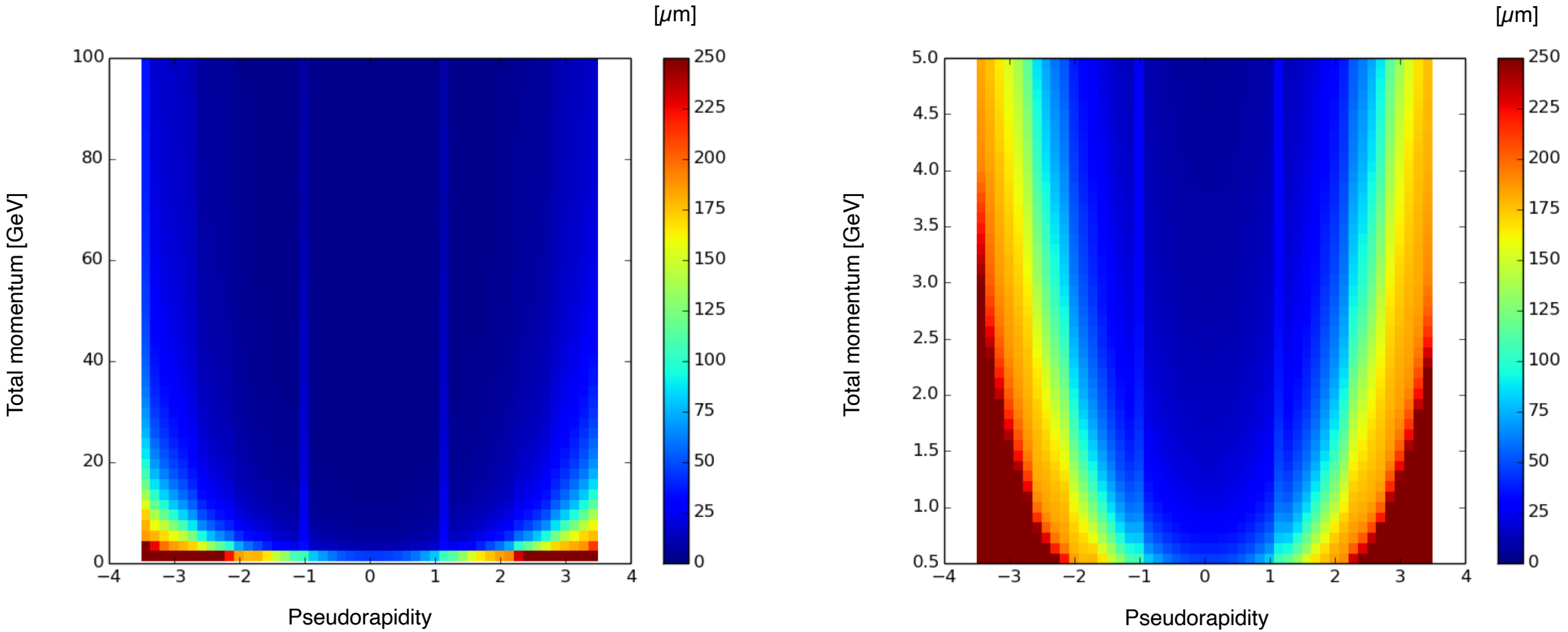


Baseline 2 – polar angle resolution from fast simulations

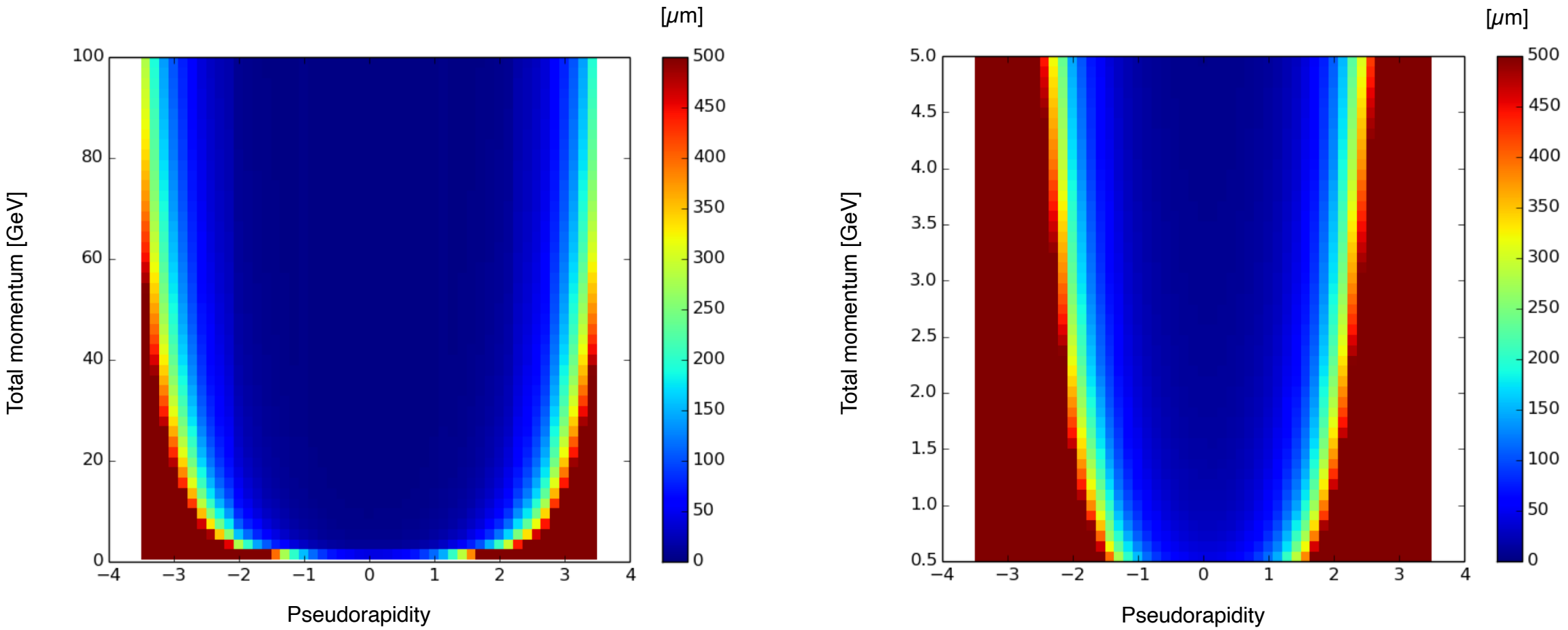




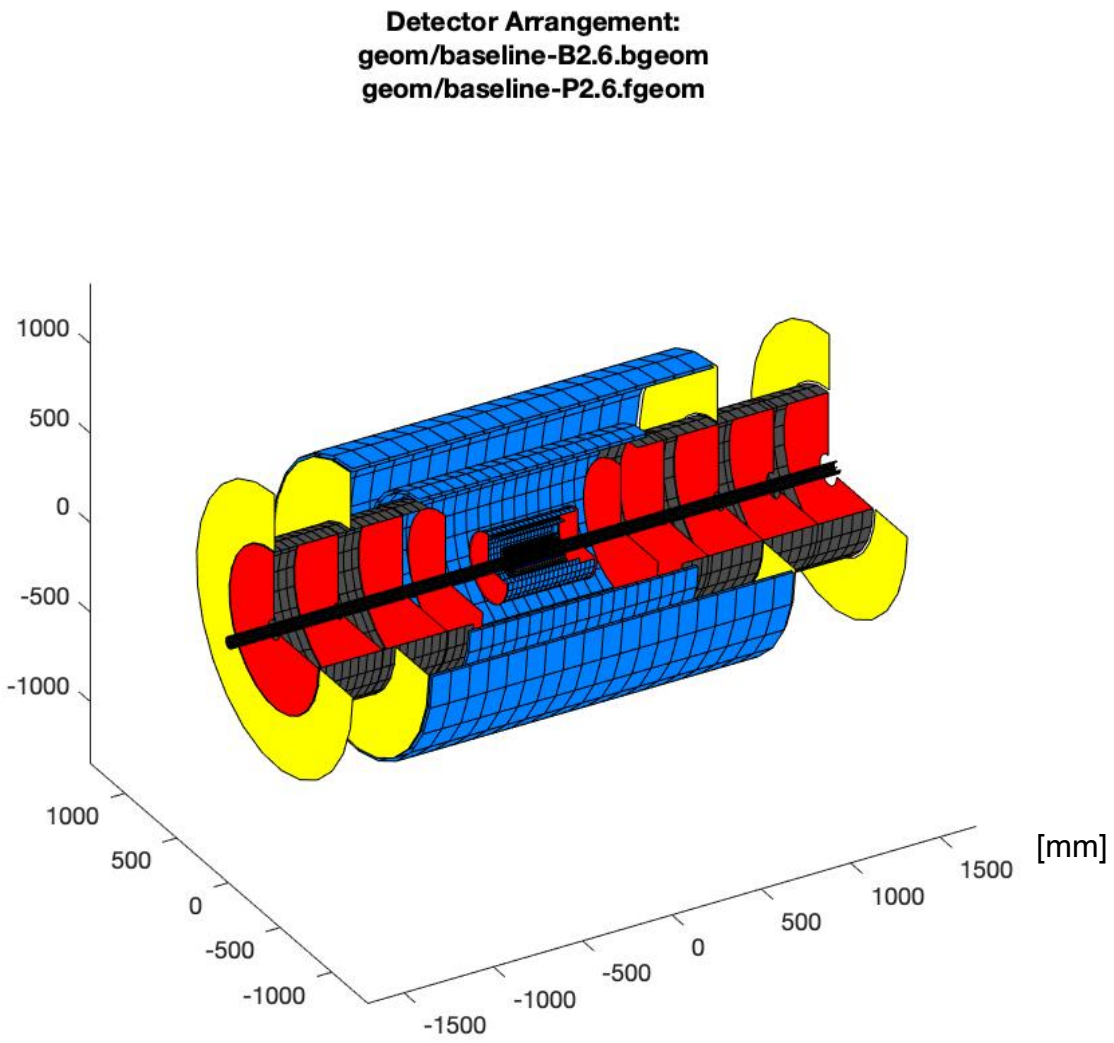
Baseline 2 – DCA_T from fast simulations



Baseline 2 – DCA_z from fast simulations



Baseline 2 – how does it differ from Baseline 0?



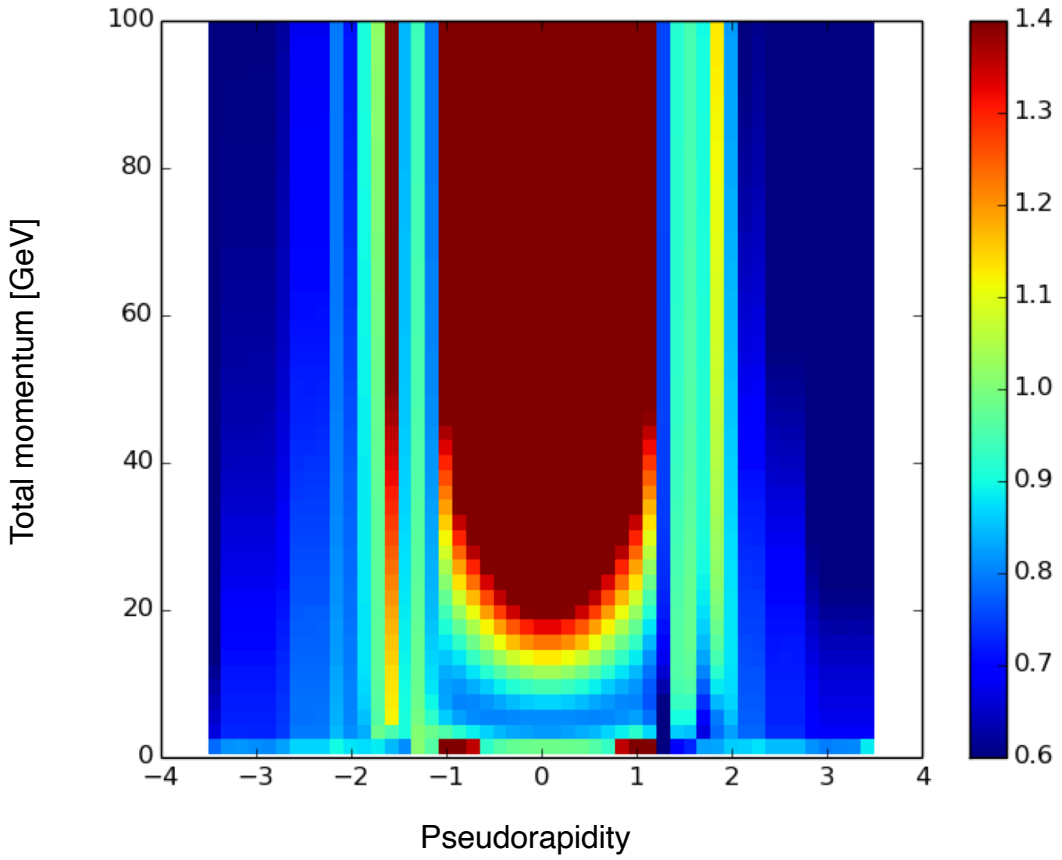
The outer MPGD barrel layers of baseline 2 have larger radii, corresponding to higher p_T tresholds, and coarser resolutions than the (smaller) MAPS outer barrel radii,

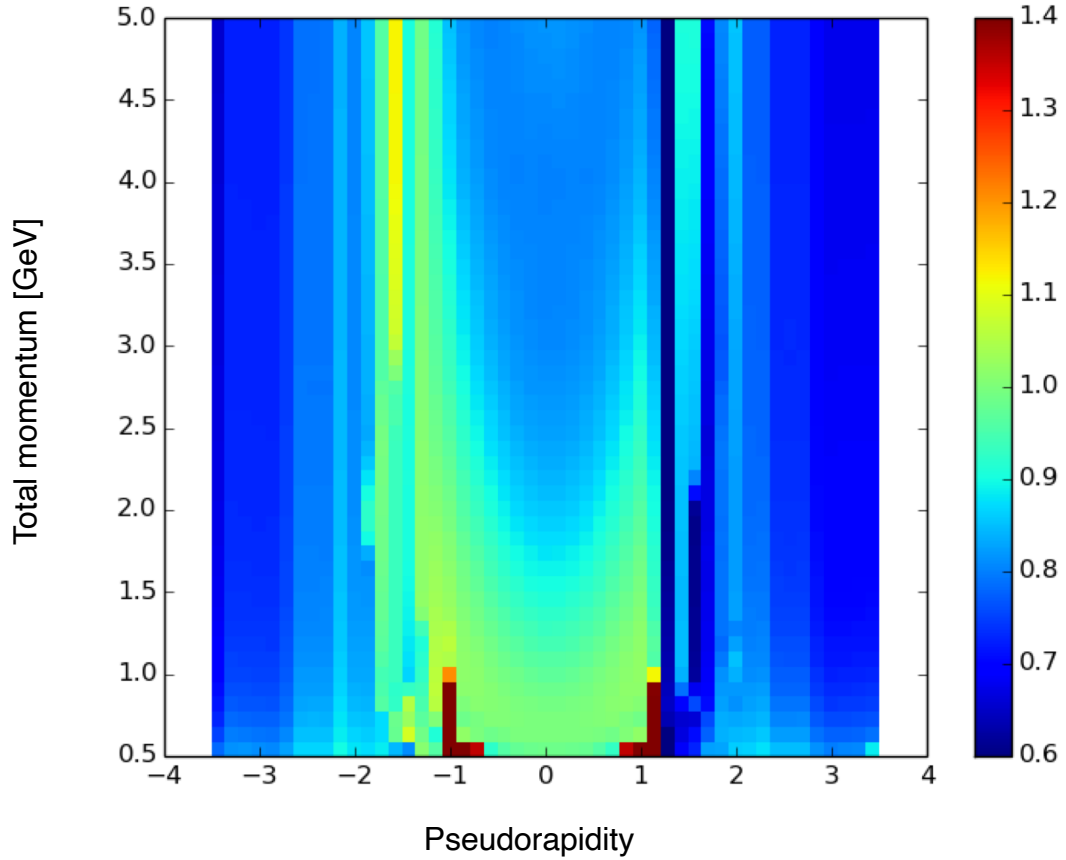
Three versus two innermost barrel vertexing layers of slightly shorter length,

The tracker extends further in z, from z = -145 cm to z = 165cm, compared to z = -121 cm and z = 121 cm,

The (yellow) outer GEM rings.

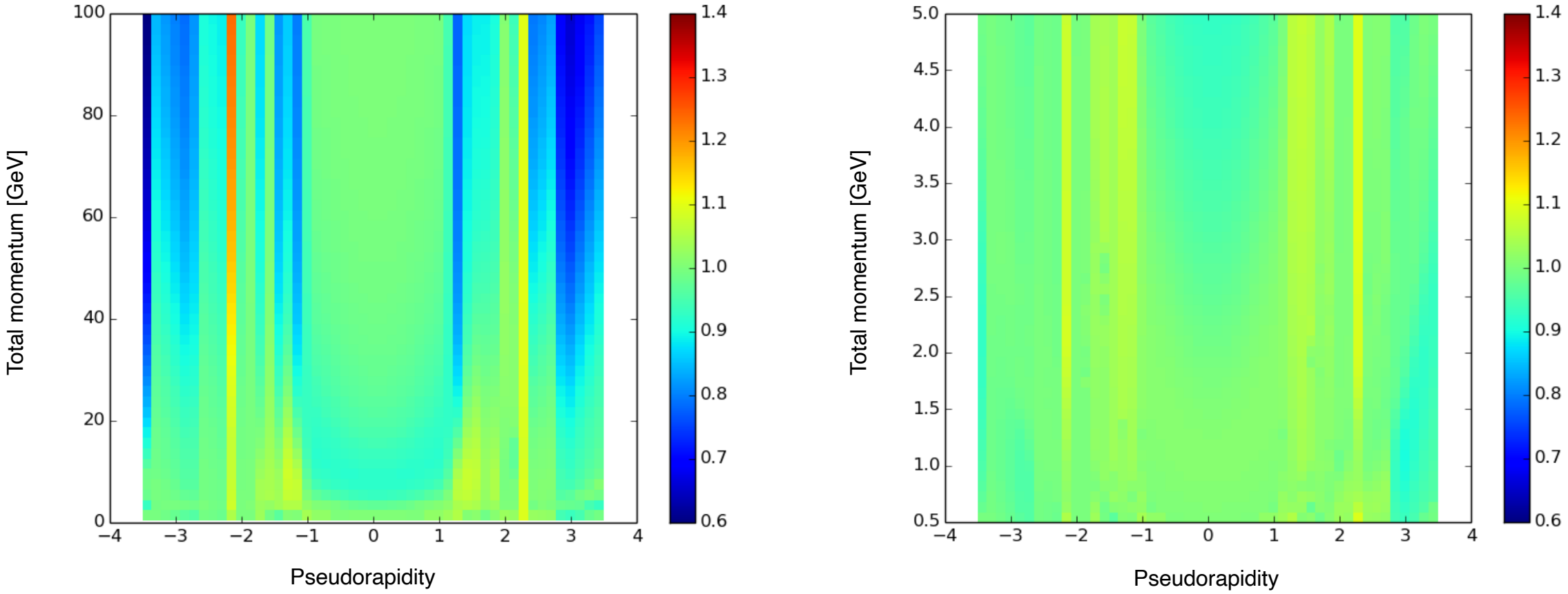
Baseline 2 / Baseline 0: ratio of dp/p





Barrel performance is worse at high p; the issue at hand is a cost trade-off,
Intermediate regions are heavily dependent on “details”,
Backward/forward region benefit from |z|-extent.

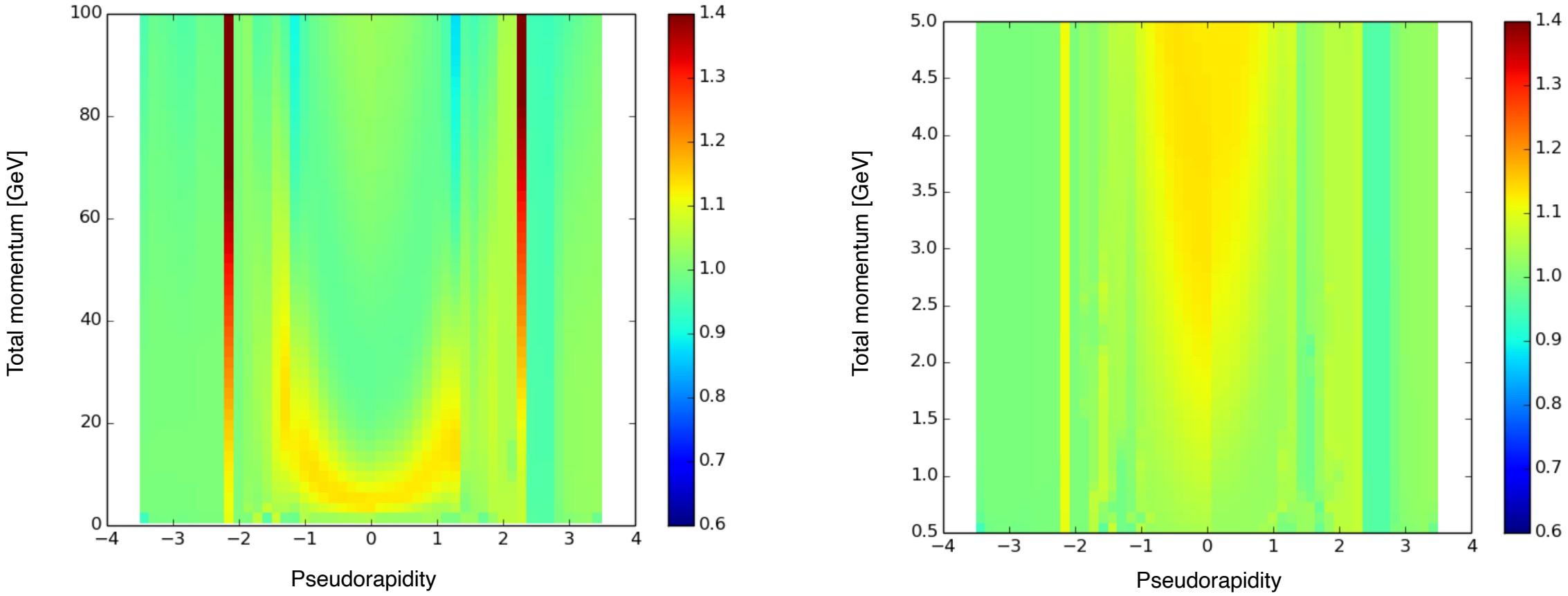
Baseline 2 / Baseline 0: ratio of DCA $_T$



No material change for most of the phase space;

- reduction in barrel vertex length results in (localized) degredation,
- high-momentum forward region benefits from lever arm,

Baseline 2 / Baseline 0: ratio of DCA_z



No material change for most of the phase space;

- reduction in barrel vertex length results in (localized) degradation,
- arguments for third vertex layer must come from redundancy and/or low p_T ,