

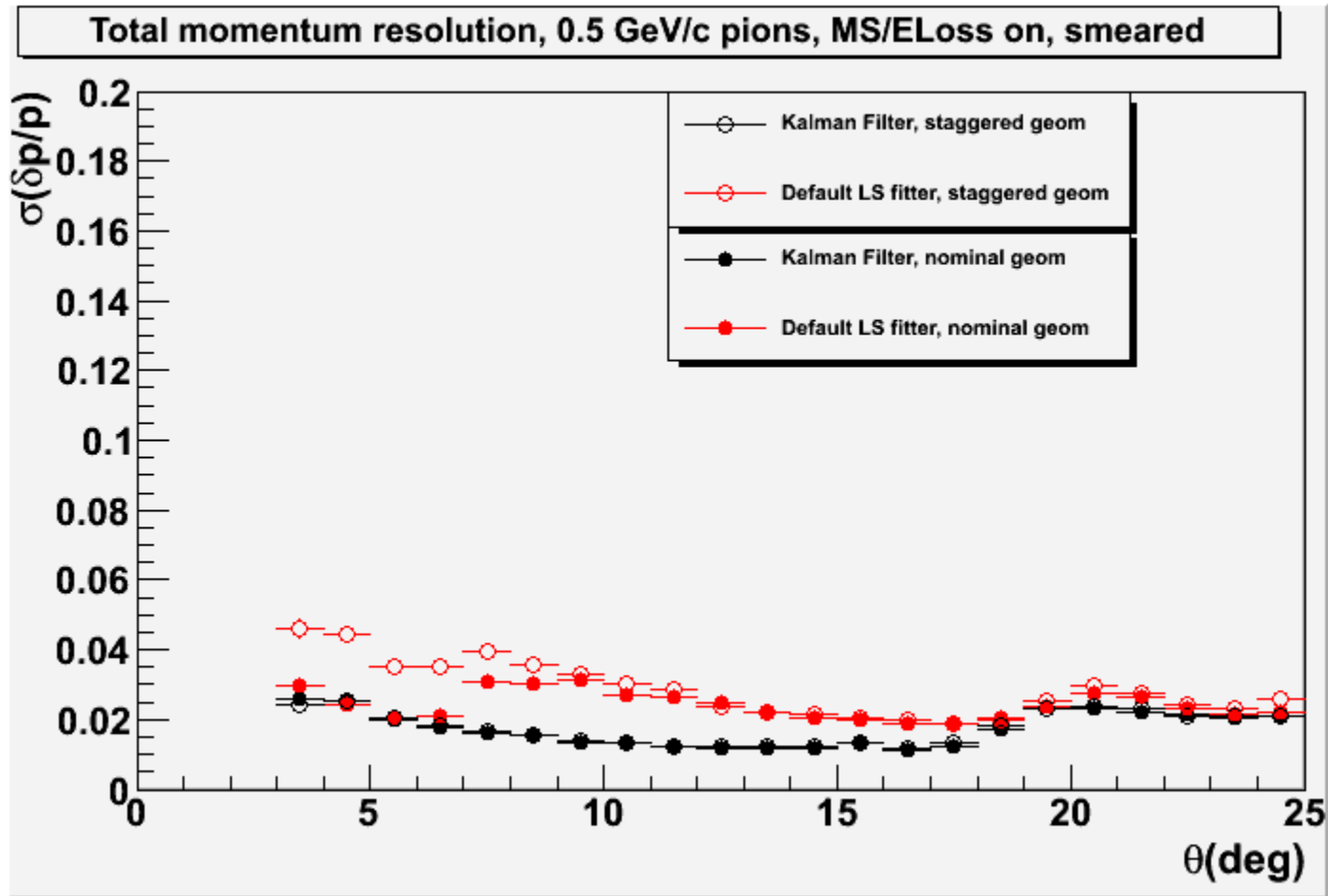
Studies of effect of half-cell offsets for FDC wire planes

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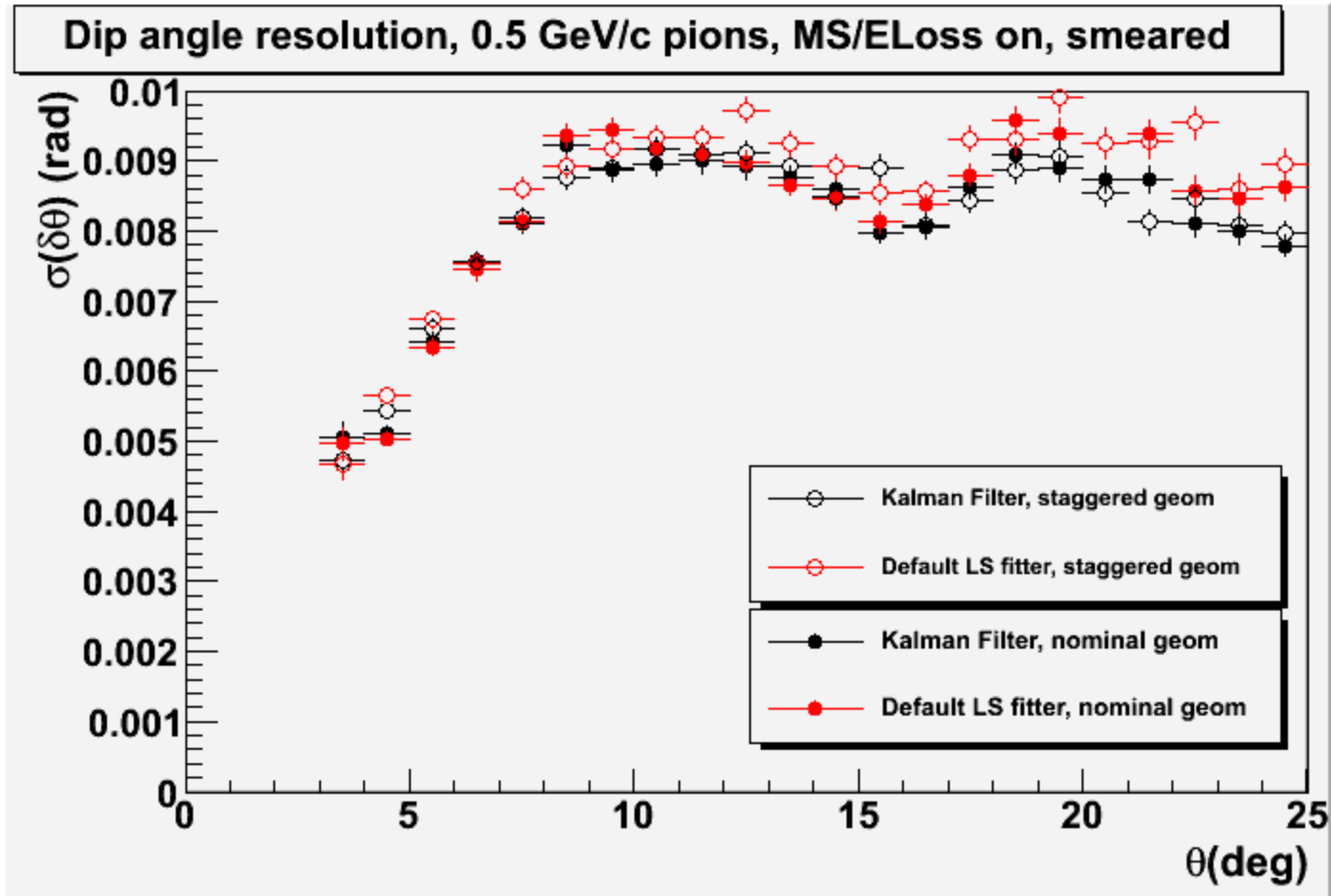
- Half-cell offset (staggering) of the sense wires between adjacent wire planes common for many drift chamber designs
 - Typical for chambers in **low/zero field** regions
 - Help with **left-right (side-of-wire) ambiguity** resolution
 - Our geometry → **switch field and sense wire positions** for every other plane
- Studied two configurations (per package):
 - Nominal: **UVWUWVW**, rotation angles $0^\circ, +60^\circ, -60^\circ, 0^\circ, +60^\circ, -60^\circ$
 - Staggered: **UU'VV'WW'**, rotation angles $0^\circ, 0^\circ, -60^\circ, -60^\circ, +60^\circ, +60^\circ$

Momentum resolution comparison

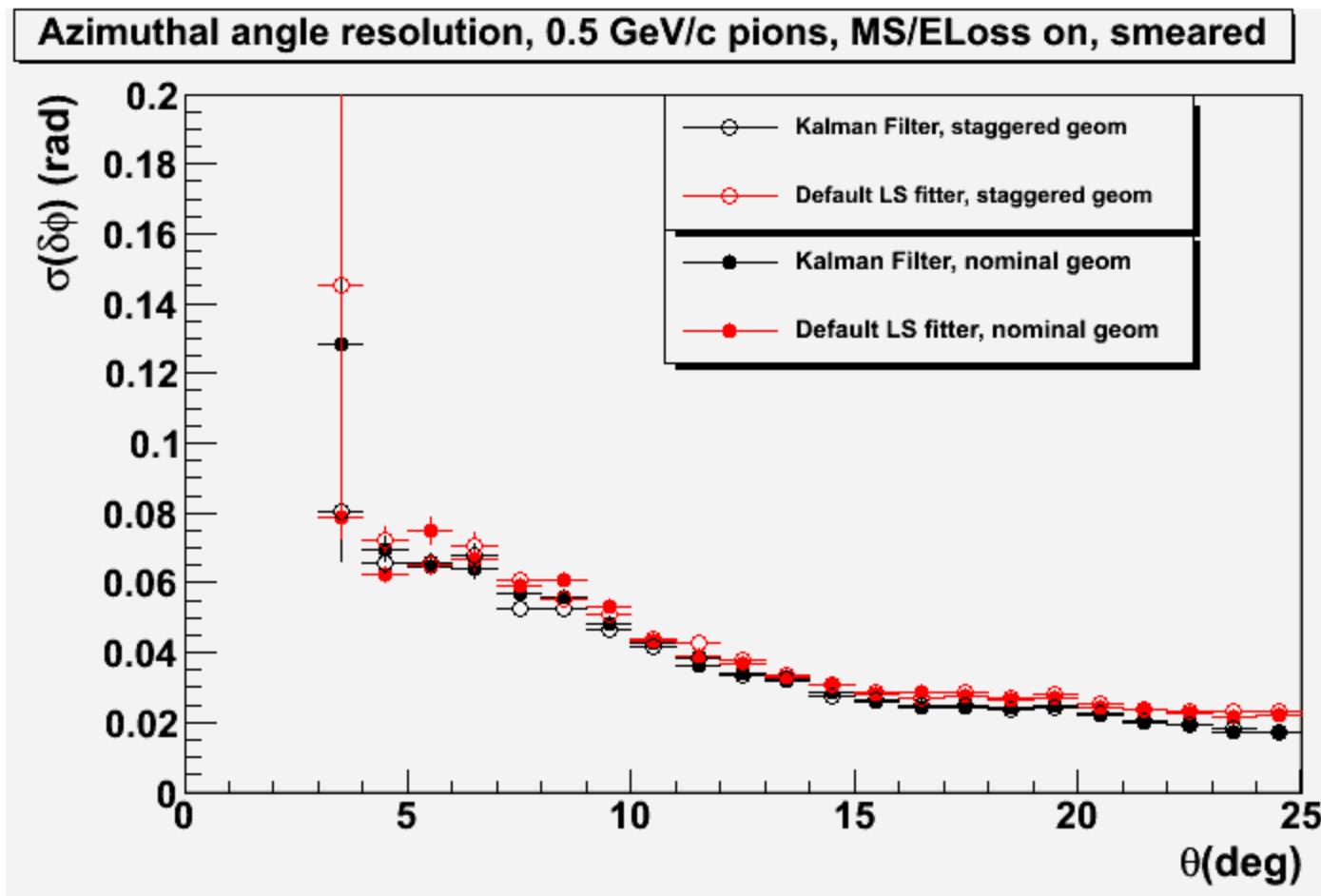
- Pions thrown from center of target in forward direction



Dip angle resolution comparison

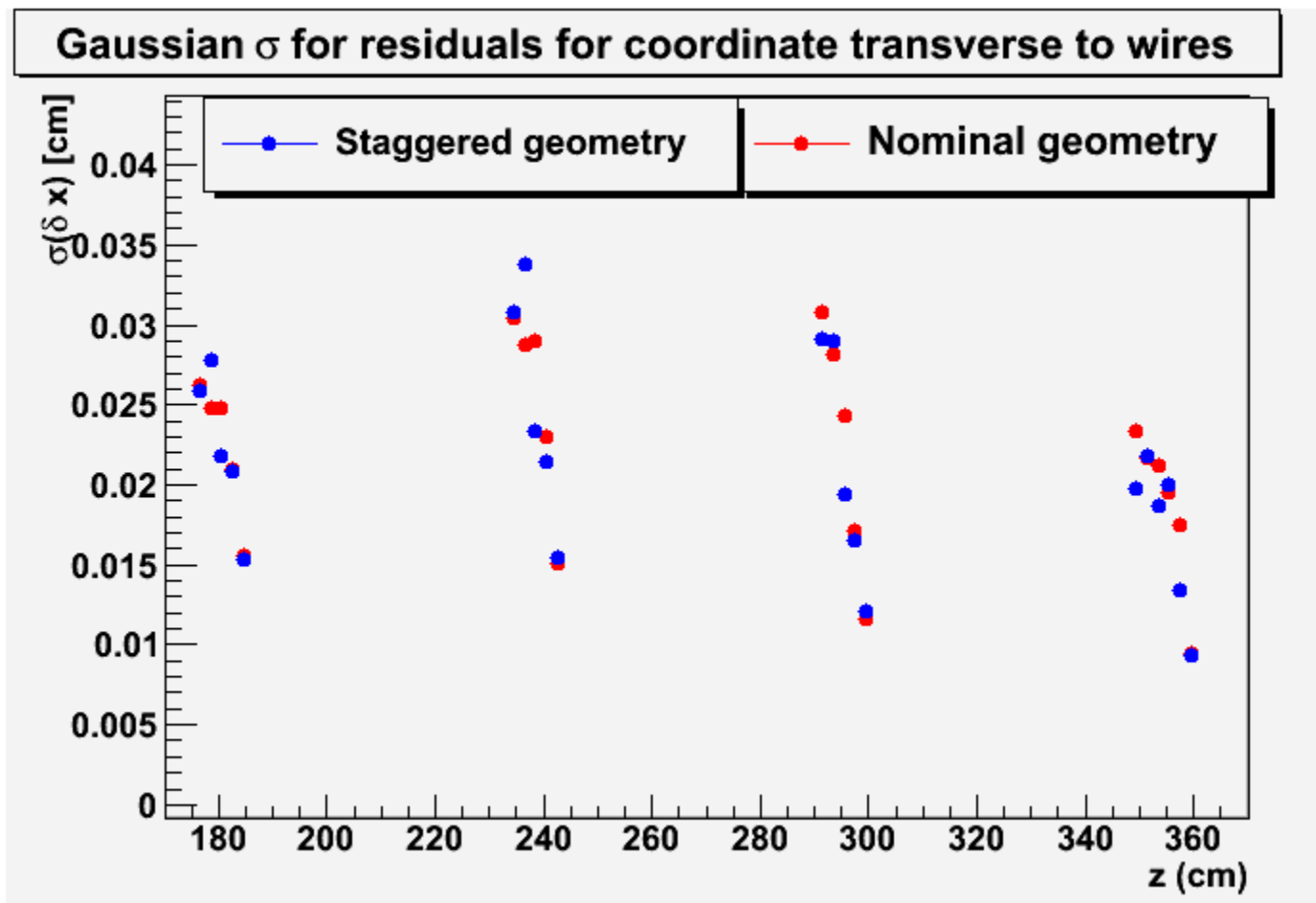


Azimuthal angle resolution comparison

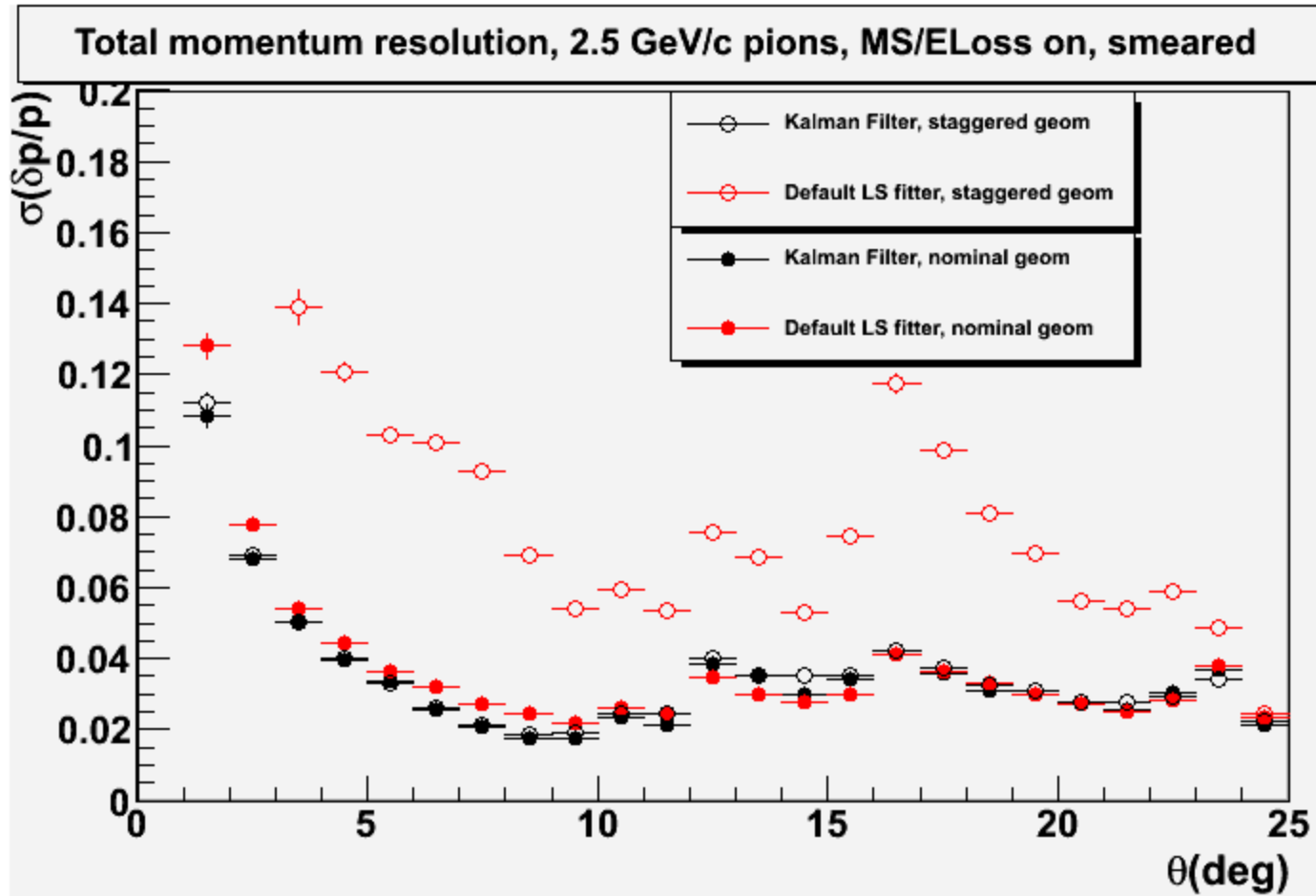


Position residuals

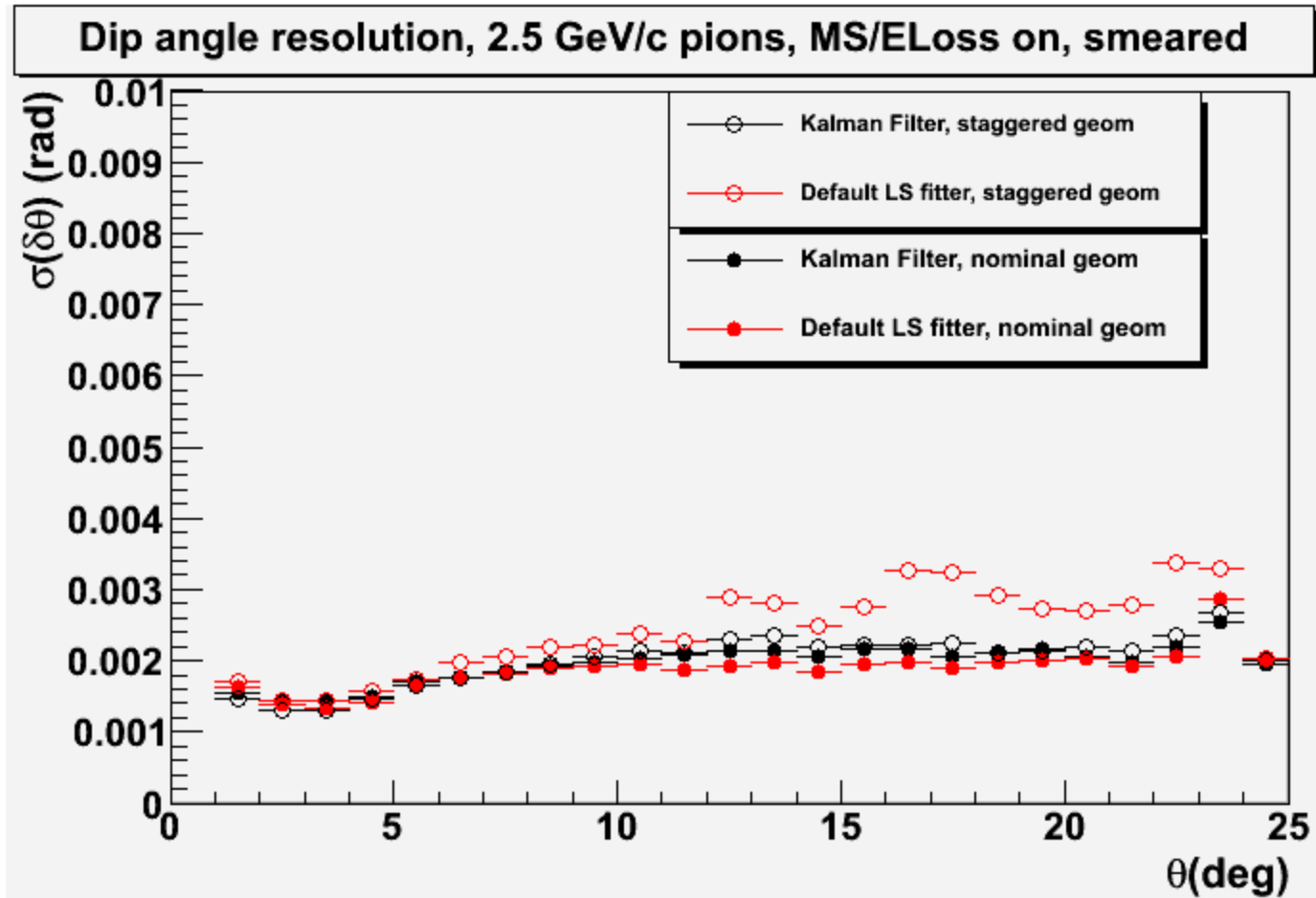
0.5 GeV/c pions



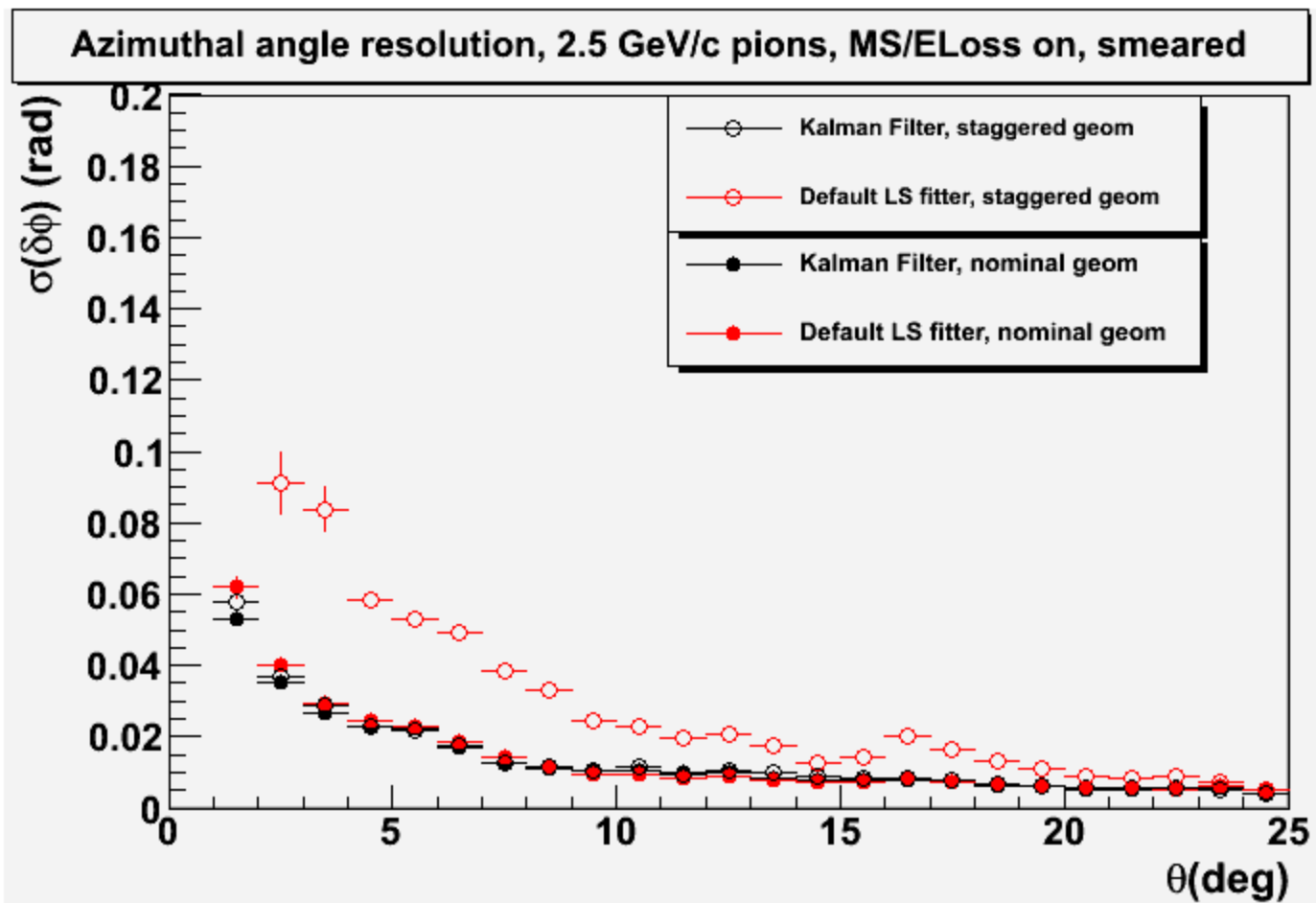
Momentum Resolution Comparison



Dip angle resolution comparison



Azimuthal angle resolution comparison



Conclusions

- Introduction of wire offsets while keeping the rotation angles the same does not improve quality of momentum parameters
 - For the LS fitter resolutions are systematically worse for higher momentum tracks...
 - [Wire offsets not recommended for FDC design](#)