

LhARA: Capture Meeting

Hin Tung Lau

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Update

- Bug identified in conversion script – Normalised momentum was artificially inflated
- The geometric sampling issue of boxes resolved for now:

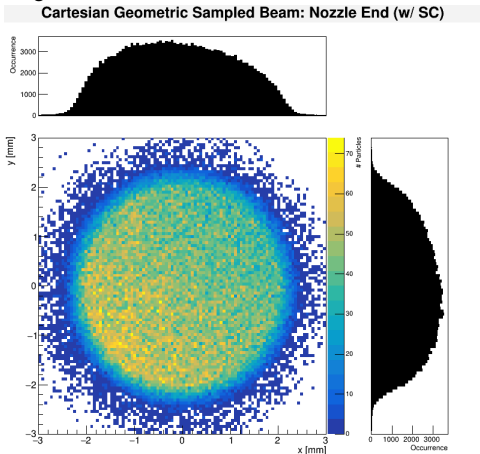
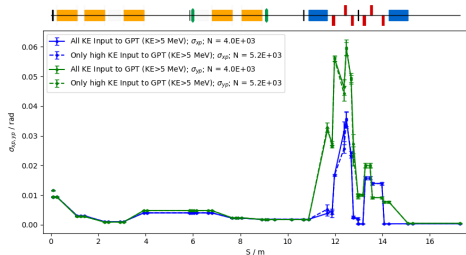
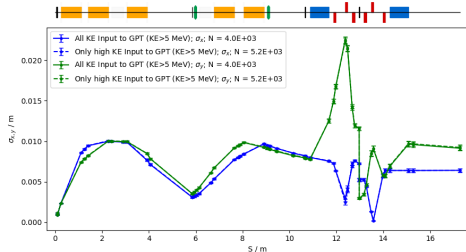


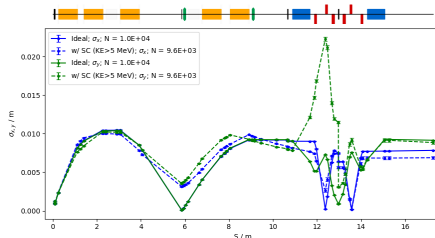
Figure: Colour corresponds to particle number in bin. Plot is for all energies.

Update

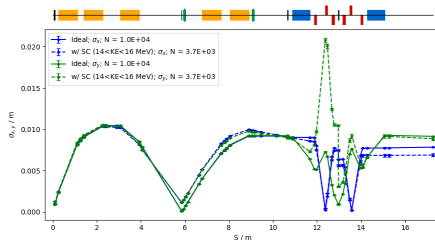
- Running GPT with input containing all kinetic energies compared to input with only higher energies gives little difference.



- Beam size comparison to ideal beam: (Geometric sampled beam energies: > 5 MeV)



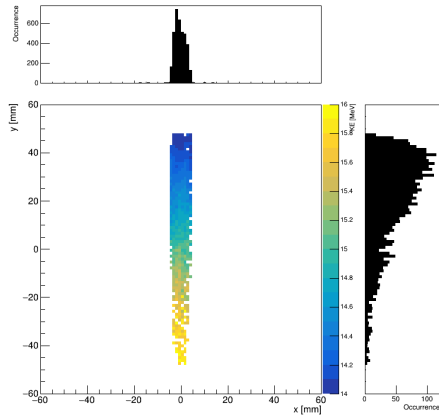
- Beam size comparison to ideal beam: (Geometric sampled beam energies: $14 < KE < 16$ MeV)



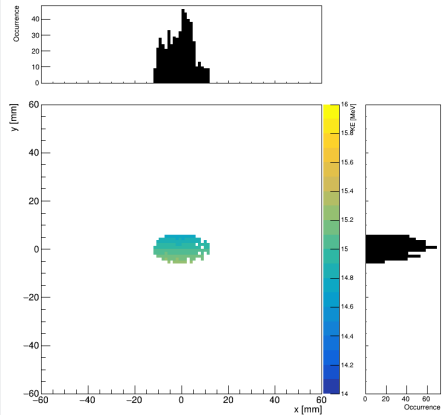
Update

- Sharp peak seems due to large population of off-axis 'lower' energy protons after first bending magnet, these get lost in the collimator at middle of arc

Cartesian Geometric Sampled Beam: 2nd Quadrupole in Arc (s1v2q2) (w/ SC)

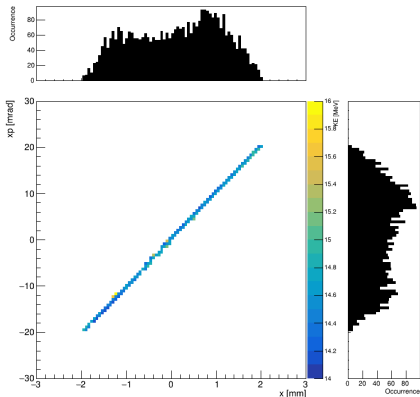


Cartesian Geometric Sampled Beam: Collimator in Arc (w/ SC)



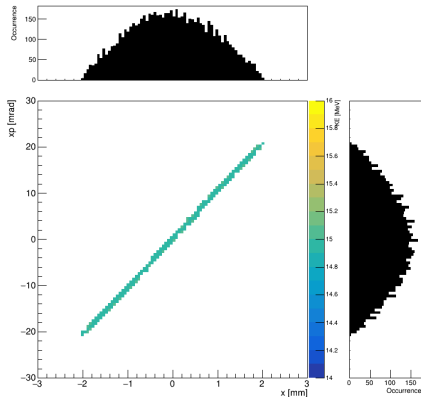
Update

Cartesian Geometric Sampled Beam: Nozzle End (w/ SC)



β_x [m]	31.602
α_x	-317.667
ϵ_x [π m rad]	2.984×10^{-8}
β_y [m]	31.652
α_y	-318.088
ϵ_y [π m rad]	2.888×10^{-8}

Ideal Beam: Nozzle End (w/ SC)



β_x [m]	4.82
α_x	-49.43
ϵ_x [π m rad]	3.277×10^{-7}
β_y [m]	4.97
α_y	-51
ϵ_y [π m rad]	3.256×10^{-7}