Due to technical constraints we model the AA collision as a heavy(dense)-light(dilute) collision in hopes that the corresponding physics remains true. Since we are in the dilute-dense limit this works for p-Pb as well as d-Au collisions.
Two-Gluon Azimuthal Correlation Function

- Properties of the two-gluon correlations
  - Exact $k_2 \rightarrow -k_2$ symmetry
    $\Rightarrow$ Even harmonics only
  - Enhancements at $k_1 = \pm k_2$
  - Nearly independent of the rapidity of the gluon pair and of the center-of-mass energy.
- Data from ALICE (2012) in p+Pb shows a double-ridge structure, qualitatively consistent with our result.
Discriminating Between Initial State CGC Correlations and Hydrodynamic Flow

- Tip-tip vs. side-side collisions in U+U
- In CGC the correlation’s strength depends on the thickness of the nucleus and not on the transverse shape as is the case for flow.
- Stronger correlations for tip-tip collisions in contrast with elliptic flow.
- Results robust for $k_T \gg Q_s$ ($\sim 2$ GeV)

$$\rho(\vec{r}) = \rho_0 \ e^{-\frac{x^2}{R^2} - \frac{y^2}{R^2} - \frac{\lambda^2}{R^2} z^2}$$

$$\frac{C_{\text{tip-tip}}(k_1, y_1, k_2, y_2)\big|_{LO}}{C_{\text{side-side}}(k_1, y_1, k_2, y_2)\big|_{LO}} = \frac{1}{\lambda} \approx 1.26$$