Contribution ID: **26** Type: **Oral**

# 重离子碰撞中椭圆流分裂行为的研究:TRENTO-3D + CLVisc 模拟

*Sunday, 26 October 2025 08:45 (20 minutes)*

Using the TRENTo-3D initial condition model coupled with (3+1)-dimensional CLVisc hydrodynamic simulations, we systematically investigate the left-right splitting of elliptic flow ($\Delta v_2$) for soft particles in relativistic heavy-ion collisions. Our study reveals that the final distribution characteristics of $\Delta v_2$ are primarily depend on the odd flow harmonics and $v_2$ itself.

We find that the parton transverse momentum scale $k_{\mathrm{T}}$ not only determines the geometric tilt of the QGP fireball but also significantly affects the rapidity dependence of both $v_1$ and $\Delta v_2$, providing new insights into the splitting mechanism of $\Delta v_2$.

Furthermore, our results demonstrate that $\Delta v_2(p_{\mathrm{T}})$ exhibits significant sensitivity to influences such as the sub-nucleonic degrees of freedom (or 'hotspots'), transverse momentum scale, and fragmentation region profile. By analyzing the $\Delta v_2$ and $\Delta v_2/v_2$ ratio, our findings provide new constraints on the uncertainties of the QGP initial state and provide additional constraints for refining model parameters.

**Primary author:** Prof. JIANG, Ze-Fang (Hubei Engineering University)

**Presenter:** Prof. JIANG, Ze-Fang (Hubei Engineering University)

**Session Classification:** Parallel III

**Track Classification:** 集体流和关联 (collective flow and correlation)