
Beitrag ID: **307** Typ: **Poster**

# Exploring transverse momentum broadening in expanding medium induced cascades

*Dienstag, 28. März 2023 18:15 (2 Stunden)*

In this work, we assess the impact of the expansion of the medium on angular distribution of gluons at different kinematical scales in a medium-induced cascade . Firstly, we study the scaling of the gluon spectra at low$-x$ between expanding and static medium profiles and apply them to obtain the transverse momentum broadened spectra. The numerical solutions for the in-medium cascades are obtained from the gluon evolution equations using the Monte Carlo event generator MINCAS. Additionally, we investigate the early and late onset of the initial quenching time for the Bjorken expanding profile. Next, we study the angular distributions for the in-cone radiation for different media and observe that the out-of-cone energy loss proceeds via the radiative break-up of hard fragments followed by an angular broadening of soft fragments. We note that for an effective in-medium path length, the angular distributions for soft fragments are very similar for different media. Also, harder jet fragments within the jets inside a cone are more sensitive to the details of the medium expansion as compared to softer fragments which are responsible for most of the gluon multiplicity in the cascade. Finally, we observe that cascades in the expanding media are relatively more collimated than in a static media and discuss phenomenological implications of our results on jet quenching observables.

## Experiment/Theory

Theory/Phenomenology

## Affiliation

Souvik Priyam Adhya : Institute of Nuclear Physics, Polish Academy of Sciences, ul. Radzikowskiego 152, 31-342 Krakow,
Poland.

**Hauptautoren:** ADHYA, Souvik Priyam (IFJ-PAN, Krakow, Poland); KUTAK, Krzysztof (IFJ PAN); PŁACZEK, Wiesław (Institute of Applied Computer Science, Jagiellonian University, ul. Lojasiewicza 11, 30-348 Krakow, Poland); ROHRMOSER, Martin (Cracow University of Technology); Dr. TYWONIUK, Konrad

**Vortragende(r):** ADHYA, Souvik Priyam (IFJ-PAN, Krakow, Poland)

**Sitzung Einordnung:** Poster Session

**Track Klassifizierung:** Jets and their modification in QCD matter