
Contribution ID: **286** Type: **Contributed Talk**

# Inclusive and heavy flavor jet production in pp and p-Pb collisions and search for jet quenching effects with the ALICE experiment at the LHC.

*Wednesday, 25 March 2020 09:44 (22 minutes)*

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Highly energetic point-like partons produced in a hard scattering will lead to a parton shower which will be fragmenting into a hadronic spray of particles called a jet. The partonic stage of such shower can be calculated from first principles using the QCD factorisation theorem. Jet substructure observables, such as jet fragmentation functions and groomed observables, provide an ideal tool to test perturbative QCD.
Jets are produced in the early stage of ultrarelativistic heavy-ion collisions. They can thus be used to probe the Quark-Gluon Plasma. The interaction of the virtual parton shower with the medium is known as jet quenching. This is a complex process in which quantum interference plays a fundamental role and leads to multiple consequences occurring at the same time:
- The re-distribution of the jet energy which is transported to large angles relative to the jet axis
- The modification of jet structure
- Jet deflection (which can be defined as an opening angle in a di-jet system) also known as accoplanarity which distribution is becoming broader.
Ultimately a consistent picture must emerge from measuring all those aspects, since they are all driven by the same underlying physical processes.

The central barrel of the ALICE detector at the LHC has unique tracking capabilities enabling to measure charged particles down to transverse momenta ($p_{\mathrm{T}}$) as low as 150 MeV/$c$ and provides particle identification. Combining information from the ALICE Time Projection Chamber and from the Electromagnetic Calorimeters EMCal/DCal allows precise measurements of the jet energy. Due to recent advances in jet finding techniques, measurements of inclusive or recoil jets with large resolution parameters are now experimentally accessible, via semi-inclusive hadron-jet or machine learning techniques down to low jet $p_{\mathrm{T}}$.

We will discuss a variety of recent measurements in pp and p-Pb and Pb-Pb collision by the ALICE collaboration. Including detailed studies of the parton shower through observables like the jet mass, jet fragmentation functions and jet substructure observables or nuclear modification factors, as well as searches for the broadening of the accoplanarity distribution (measured by the semi-inclusive distribution of jets recoiling from a high-$p_{\mathrm{T}}$ hadron) and the first direct measurement of the dead-cone effect at colliders using iterative jet declustering techniques.

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**Session Classification:** QCD with Heavy Flavors and Hadronic Final States

**Track Classification:** QCD with Heavy Flavors and Hadronic Final States