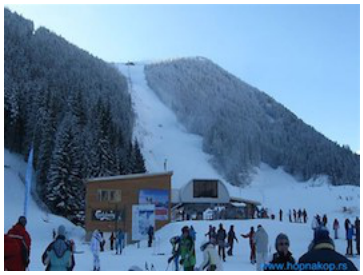

Contribution ID: **6** Type: **not specified**

# Parton energy loss and charmonia suppression in heavy ion collisions

*Monday 12 March 2018 18:30 (30 minutes)*

Understanding the energy loss of partons traversing the strongly interacting matter created in heavy ion collisions is one of key goals of the heavy ion physics program. After a brief introduction to the field and explaining connections of heavy ion physics and high-energy QCD physics, we present results of phenomenological analyses of various recent jet quenching data. The core of the model used in these analyses is based on the shift formalism which allows for an extraction of the magnitude of parton energy loss from the data with minimal assumptions on the underlying physics mechanisms. The model is capable of describing the full $p_T$, rapidity, and centrality dependence of the measured jet nuclear modification factor using three effective parameters. The analysis done using this simple model can explain the shape of the modification of fragmentation functions observed in the data as well as the relation between the magnitude of the nuclear modification factor of jets and charged particles. The analysis of recent data on splitting functions and fragmentation functions allows for further constrains on the role of coherence effects in the parton energy loss. Further, the analysis of charmonia suppression using this model points to a remarkable similarity between the quenching of light-quark-initiated jets and the prompt charmonia suppression. This may bring an insight into both the suppression mechanism and general aspects of charmonia formation which is still not well understood.

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**Session Classification:** Talks - Mon, Afternoon, 2nd session