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Correlations and Jets in Heavy-Ion Collisions

JASON GLYNDWR ULERY, Purdue/FIAS/IKP Frankfurt

Interactions of jets with the medium produced in heavy-ion collisions can provide important insight into the properties of the medium. This can be explored via particle correlations. Two-particle correlations with high p_T triggers have shown modified structures on both the near-side and away-side. The near-side shows a “ridge”, a structure that is correlated in azimuth but exhibits a long range structure in pseudo-rapidity. The ridge could be explained by partons bent in chromo-magnetic fields, couplings with longitudinal flow, or other mechanisms. The away-side shows a broadened and even double peaked structure in azimuth. Conical emission from Mach-cone shock waves or Čeronkov gluon radiation along with other physics mechanisms have been suggested to explain this modification. Three-particle correlations and correlations with identified particles have been employed to provide further insight into both the near-side and away-side modifications. This talk will review medium responses to jet probes studied with 2-particle and 3-particle correlations.