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Forward quark jet-nucleus scattering in a light-front Hamiltonian approach

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We investigate the scattering of a quark jet on a high-energy heavy nucleus using the time-dependent light-front Hamiltonian approach. We present the real-time evolution of the quark-jet in a strong classical color field of the incoming nucleus described by the Color Glass Condensate effective theory. We calculate the cross section, the differential cross section, and the quark jet distribution function in coordinate space as well as in color space. We study the sub-eikonal effect by letting the quark jet carry realistic finite longitudinal momenta, and we find sizeable changes on the transverse coordinate distribution of the quark. We then extend our investigation by including dynamical gluons and study jet quenching with gluon emissions.

Collaboration (if applicable)

Track

Initial State

Contribution type

Contributed Talk

Author: LI, Meijian (University of Jyväskylä)

Co-authors: CHEN, Guangyao (Iowa State University); VARY, James (Iowa State University); TUCHIN, Kirill (Iowa State University); MARIS, Pieter (Iowa State University); Prof. LAPPI, Tuomas (University of Jyväskylä); ZHAO, Xingbo (Institute of Modern Physics, Chinese Academy of Sciences); Dr LI, Yang (Iowa State University)

Presenter: LI, Meijian (University of Jyväskylä)

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