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Heavy-flavor jets and hard-process correlations in HI collisions with ATLAS

Tuesday, 24 March 2026 15:15 (20 minutes)

This talk presents new ATLAS results that probe the mass and system-size dependence of parton-medium interactions using heavy-flavor jets in Pb+Pb collisions and hard-process correlations in O+O collisions. The first part reports measurements of b-tagged jets and events with multiple jets recoiling against a photon in Pb+Pb collisions. These measurements place strong constraints on the color-charge and mass dependence of parton energy loss. The second part uses the unique system size of O+O collisions to investigate hard probes in a small collision environment. We present measurements of dijet momentum balance and γ–hadron correlations, which test the onset—or potential absence—of final-state energy loss as the system size decreases. Together, the Pb+Pb b-jet results and O+O hard-process observables offer a coherent picture of energy-loss mechanisms across parton flavor and system size, providing new constraints for theoretical models and insights into the emergence of medium effects in small collision systems.

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