

## Probing nuclear matter with jets and $\gamma$ -hadron correlations: results from PHENIX

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Fully reconstructed jets and hadrons correlated with a direct photon significantly reduce energy-loss bias, the bias toward measuring particles from partons which suffer little energy loss. In d+Au collisions, one accesses the physics at large  $x$ , which yields important constraints for nuclear parton distribution functions. In both d+Au and A+A collisions, coherent multiple-scattering models of energy loss can be tested. In this contribution, we present the current results from the PHENIX experiment on fully reconstructed jets and direct  $\gamma$ -hadron correlations. Baseline measurements of jets in p+p collisions as well as their yield and correlation modifications in d+Au and Cu+Cu will be given. From  $\gamma$ -hadron correlations, we present the fragmentation function in p+p and Au+Au collisions and its modification in Au+Au to lower  $z_T$  than what has previously been studied. Implications of this data on our understanding of both cold and hot, dense nuclear matter created at RHIC are discussed.

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