Experimental Results on Jets in pA
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The experimentally observed reduction of jet yields in ultrarelativistic heavy ion (AA) collisions relative to proton-proton (pp) collisions is widely interpreted in terms of energy loss of a hard scattered parton traversing a quark-gluon plasma (QGP) before fragmenting into a jet of hadrons. In order to constrain proposed mechanisms of energy loss, a variety of measurements are needed that quantify both how the jet yields and jet structure are modified in the medium. However, jets may also be modified by differences in the initial state of the nucleus relative to that of the proton. The precise determination of the QGP properties relies on disentangling these additional modifications, collectively termed “cold nuclear matter” effects, from energy loss in the QGP. Collisions between heavy ions and protons (pA) provide a potential control environment where cold nuclear matter effects should be present, but QGP formation is generally not expected to occur. In this talk, an overview of recent jet results from proton-lead collisions produced at the LHC will be given. The yield of inclusive jets and distributions of dijet pairs are shown to be compatible with generally accepted theoretical expectations, although significant modification is observed when yields are measured from specific centrality classes of pA collision events. Some measurements of high-$p_T$ charged hadron yields suggest a larger modification in pA collisions relative to pp collisions than for inclusive jet yields. The potential implications of this difference along with other measurements relating to jet structure will be discussed.