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Study of quark energy loss via Drell-Yan process in p+A collisions at Fermilab E906/SeaQuest experiment

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E906/SeaQuest is a fixed-target experiment operated at Fermi National Accelerator Laboratory. Using the 120 GeV proton beams from the Main Injector, E906/SeaQuest measures the Drell-Yan production in the dimuon mass region of 4-8 GeV in p+p and p+A collisions over a wide xF range. Parton energy loss in QGP is considered as the dominant mechanism of the observed jet-quenching phenomena at RHIC and LHC. In order to clearly estimate the energy loss effect in QGP possibly formed in A+A collisions, a benchmark of parton energy loss in cold (or normal) nuclear matter, established from p+A collisions, is indispensable. Since the center-of-mass energy of p+A collisions is low and the antiquarks of nucleons inside nuclei sit out of the nuclear shadowing region in E906/SeaQuest, our measurement of quark energy loss via Drell-Yan process will provide the first clean determination of parton energy loss effect in cold nuclear medium. E906/SeaQuest has been taking data since February 2012 and will continue to the end of April of this year. We will present the current status and the prospect of the parton energy loss measurements.

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