

Probing Low X nPDF with Photons in d+Au Collisions at $\sqrt{s} = 200 \text{ GeV}$

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A strong suppression of hadron yields in d-Au collision has been seen at forward rapidities at RHIC which is connected to gluon saturation in the underlying PDFs. Direct photon measurements provide complementary insight towards the physical nature of these effects since they are directly sensitive to the gluon density (Compton process).

Experimentally the ability to isolate direct photons from the electromagnetic background can be achieved with a high spatial resolution detector preceding the calorimeter. Such detector has been installed in PHENIX at RHIC and successfully took data for d+Au collisions at 200 GeV during 2016. The detector system consists of a highly segmented silicon-tungsten pre-shower detector coupled to a PWO4 electromagnetic calorimeter located at $3.1 < \eta < 3.9$.

A broad overview of its physics case, performance and prospects for reconstruction of direct photons and π^0 will be discussed here.