



Leona Woods

**DISTINGUISHED POSTDOCTORAL
LECTURESHIP AWARD**

BROOKHAVEN
NATIONAL LABORATORY

**70 YEARS OF
DISCOVERY**
A CENTURY OF SERVICE

FALL 2017 LECTURES

Dr. Elena Petreska, NIKHEF

COLLOQUIUM: SEPTEMBER 12, 2017 @ 3:30PM

Large Seminar Room, Building 510

Momentum-space Structure of Hadrons And Nuclei At High Energy

Transverse-momentum-dependent (TMD) distributions describe the configuration of quarks and gluons inside protons and nuclei in three-dimensional momentum space. Observables in scattering experiments can be calculated with the help of TMD factorization formulas, where the target and projectile are represented with non-perturbative TMD distributions, which are separated from the short-distance perturbative part of the collision. A complementary approach to study the momentum structure of protons and nuclei at high energy is the Color Glass Condensate which is an effective theory for the high-gluon-density region of ultra-relativistic particles. We introduce both theories and we discuss connections between them. We present phenomenological results derived from these connections.



SEMINAR: SEPTEMBER 15, 2017 @ 2PM

Small Seminar Room, Building 510

TMD Gluon Distributions For Dijet Production And Their Behavior At Small X

Starting from the Color Glass Condensate (CGC) cross section for dijet production in proton-nucleus collisions we derive a transverse-momentum-dependent (TMD) factorization formula for small transverse-momentum imbalance of the jets and for finite number of colors. For the eight TMD distributions appearing in the cross section we determine their operator definitions at small-x as CGC correlators of Wilson lines and we study their JIMWLK evolution. We find that at large transverse momentum the universality of TMDs gets restored. We also discuss an extension of the approach to generalized TMDs (GTMDs) that can give an insight into the angular correlations between impact parameter and dipole size in the CGC framework.

The Leona Woods Distinguished Postdoctoral Lectureship Award is sponsored by the BNL physics department to celebrate the scientific accomplishments of outstanding female or under-represented minority physicists. Lecturers will visit BNL for at least a week and give a general interest colloquium and a technical talk in their area of expertise. Lecturers will be within 7 years of the Ph.D and have achievements in broadly defined areas of interest to the BNL physics department: Astrophysics and cosmology, and experimental and theoretical nuclear and high energy physics.

Leona Woods was one of a small number of female physicists contributing to the Manhattan project and was a visiting physicist in the BNL Physics Department between 1958 and 1962.

For information about nominations or to nominate a candidate, please contact Peter Steinberg or Sally Dawson.



Leona Woods, John Wheeler, and others at the Hanford reactor in Washington State.