



Πανεπιστήμιο
Κύπρου

ΤΜΗΜΑ ΦΥΣΙΚΗΣ

Το Τμήμα Φυσικής του Πανεπιστημίου Κύπρου
σας προσκαλεί την

Πέμπτη, 30 Μαΐου 2019, ώρα 16:00
στην αίθουσα B228, στο κτίριο 13 στην Πανεπιστημιούπολη

στην παρουσίαση της Διδακτορικής Διατριβής της Aurora Scapellato

"Direct evaluation of Parton Distribution Functions of the Nucleon from Lattice QCD"

We describe the computation of parton distribution functions (PDFs) of the nucleon from first principles. The investigation is done within the lattice formulation of Quantum Chromodynamics (QCD). The numerical calculations are performed employing a twisted mass ensemble of gauge field configurations simulated with two degenerate light quarks with mass fixed to their physical value. By using the quasi-PDF approach we extract the isovector unpolarized, helicity and transversity distributions. Within this approach, we compute quasi-distributions which are related to the physical PDFs using the framework of Large Momentum Effective Theory. As the nucleon boost increases, we observe that the renormalized lattice PDFs move towards the quark distributions extracted from global QCD analyses. The results at larger momentum boost reproduce the main features of the phenomenological fits to inclusive and semi-inclusive scattering data. We discuss future issues that need to be addressed to eliminate systematic uncertainties related to the lattice calculation. The results obtained clearly demonstrate the potential impact of non-perturbative methods in the determination of PDFs and open a most promising path to investigate quantities that require the evaluation of non-local operators on the lattice.

Για περισσότερες πληροφορίες παρακαλώ επικοινωνείτε: Τμήμα Φυσικής, τηλέφωνο: 22892820