



ΑΡΙΣΤΟΤΕΛΕΙΟ
ΠΑΝΕΠΙΣΤΗΜΙΟ
ΘΕΣΣΑΛΟΝΙΚΗΣ

ΣΕΜΙΝΑΡΙΟ ΠΜΣ ΥΠΟΛΟΓΙΣΤΙΚΗΣ ΦΥΣΙΚΗΣ ΤΜΗΜΑ ΦΥΣΙΚΗΣ

Τρίτη 6 Σεπτεμβρίου 2022

ώρα 12:00

Αίθουσα Συνεδριάσεων του Τμήματος (4ος όροφος, αίθουσα 26)

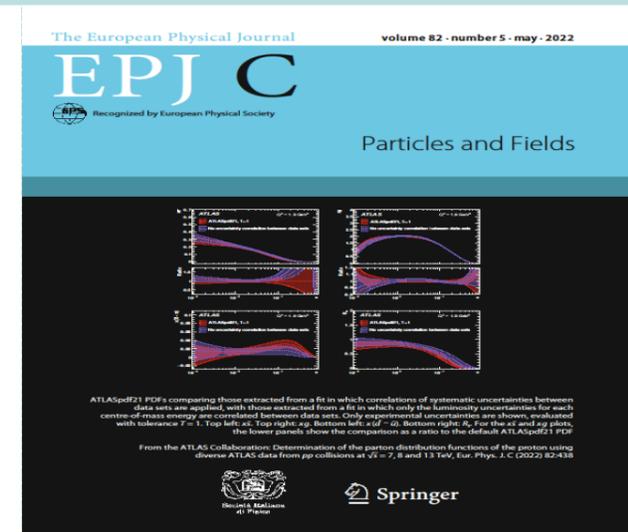
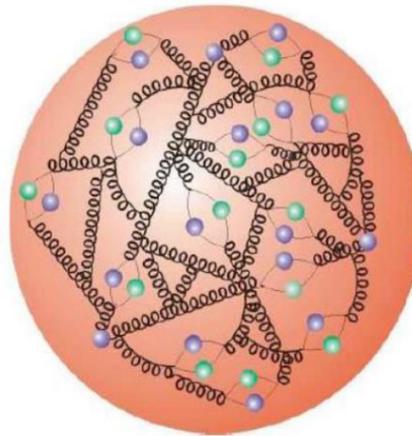
Σεμινάρια ΠΜΣ Υπολογιστικής Φυσικής 2022-2023

ΥΠΟΛΟΓΙΣΤΙΚΗ ΔΥΝΑΜΙΚΗ, ΑΣΤΡΟΔΥΝΑΜΙΚΗ & ΧΑΟΣ
Φρακταλικές δομές & Χaos, Παράδειγμα ελαστικής, Μελέτη του προβλήματος των 3 σφαιρών

ΥΠΟΛΟΓΙΣΤΙΚΗ ΒΙΟΦΥΣΙΚΗ
Μελέτη της ροής & δομής του αγγειακού δικτύου, Ρεοτομολογική & θερμική ανάλυση ανθρώπινων οργάνων, Ελαστική ρεοελαστική (SAR), Προσομοίωση δομής πρωτεΐνης με τη μέθοδο πακέτου coils

ΠΥΡΗΝΙΚΗ ΦΥΣΙΚΗ & ΣΤΟΙΧΕΙΩΔΗ ΣΩΜΑΤΙΑ
Εκπαίδευση ROOT (object-oriented program and library developed by CERN), Μικροσκοπικά & μακροσκοπικά τμήματα αερίων, Στοιχειώδη σωματάρια & κοσμική ακτινοβολία

The Deep Structure of the Proton- Why it matters for the LHC



**Prof. Amanda Cooper-Sarkar
Oxford University**

At the LHC in CERN we are colliding protons, but it is not really the protons which are interacting, it is their constituents - the quarks and gluons, collectively called partons. Thus we need to understand the behavior of the partons within the proton to interpret LHC data, whether in terms of the Standard Model of particle physics or in the search for new physics Beyond the Standard Model. Indeed the limiting factor on such searches is now the uncertainty on the Parton Distribution Functions (PDFs). These are the distributions in the fractional momentum of the proton for each flavour of parton. Such distributions were originally determined in the Deep Inelastic Scattering experiments, such as the electron-proton collider HERA at DESY. The talk will explain how we have determined the PDFs and how we use this knowledge, and indeed extend it, at the LHC, and conclude with the current state of the art in terms of the limitations on our searches for new physics and how we may improve in future.

Το προφίλ του ομιλητή



Amanda Cooper-Sarkar did her Bachelor's and Doctorate degrees at Oxford University in the 1970's. She then did post-doctoral positions at Tata Institute of Fundamental Research, Bombay; KEK Tsukuba, Japan; Rutherford Appleton Lab, UK and at CERN. She became a Fellow of St Hilda's College, Oxford and a member of the Particle Physics sub-department at Oxford in 1990, gaining a Full Professorship in 2008. In 2009 she was awarded the Institute of Physics UK, Particle Physics Divisional prize and in 2015 the Chadwick Medal. From 2019 she has held a Leverhulme Trust award. Since rejoining Oxford she became an expert in Deep Inelastic Scattering and Parton Distribution Functions (PDFs), working with the ZEUS Collaboration at DESY Hamburg, writing a graduate textbook on the subject in 2004. She is currently a member of the ATLAS Collaboration at CERN, where she leads the effort to use ATLAS data to improve our knowledge of PDFs. She is also a founder member of the PDF4LHC group, which advises the LHC Collaboration on the use of PDFs.