



ATLAS BSM Searches in Multileptonic Final States PhD Studentship

<http://www.sussex.ac.uk/epp/>

Funded and self-funded PhD projects are available to work on the ATLAS experiment at CERN's Large Hadron Collider (LHC) under the supervision of Professor Antonella De Santo. Available projects are well synchronised with the start of the LHC Run-3, which will lead to the collection of unprecedented amounts of proton-proton collisions at the highest energies ever reached at a collider. Successful applicants will join Sussex's leading programme of data-intensive searches for new physics phenomena Beyond the Standard Model (BSM) in multileptonic final states at ATLAS, using Run-2 and Run-3 data samples collected by the experiment. Multileptonic "signatures" are characteristic of a wide range of exciting BSM scenarios, which aim to shed light on some of the most pressing questions in fundamental physics – such as the origin of dark matter in our universe, or the fundamental nature of neutrino masses. Models to be explored include the production of weakly interacting supersymmetric particles known as charginos and neutralinos, or the production of exotic heavy neutral leptons as encountered in seesaw models of neutrino masses.

Sussex's principal technical involvement in ATLAS is through the experiment's trigger system, including focus on future upgrades of the ATLAS detector. Commensurately with their role, and in synergy with their other research and training activities, successful applicants will be expected to contribute to Sussex's technical commitments to the ATLAS experiment. Example of trigger-related activities that Sussex students have significantly contributed to in recent years include software developments for the ATLAS Inner Detector system, or the characterisation of key properties of electron-based triggers.

Professor De Santo is the ATLAS team leader at Sussex. She is a leading researcher in BSM signal searches, with an established track-record as a successful supervisor and mentor of early-career researchers. The Sussex ATLAS team, which counts approximately twenty members, offers a dynamic and supportive environment, where each team member is enabled to thrive.

Funding is available for a September 2021 start which includes a tax-free bursary (expected to be £15,560 per annum in 2021/22) and fully paid tuition fees for 3.5 years at the home-student level. Additional financial support is provided to cover short-term and long-term travel. Interviews of shortlisted candidates will be held in February and March initially and will continue until positions are filled. Applications from self-funded students interested in available projects are also welcome at any time of the year.

Suitably qualified applicants who require further details on the available projects are encouraged to contact Professor De Santo (email: a.de-santo@sussex.ac.uk) in advance of their application.

For practical questions about applications and/or eligibility for funding, please contact: mpsresearchsupport@sussex.ac.uk

For academic questions please contact the coordinator of EPP PhD admissions, Dr. W. Clark Griffith: W.C.Griffith@sussex.ac.uk

Applications: <https://www.sussex.ac.uk/study/phd/apply>

Please state in the Finance section of the online form that you are applying for STFC EPP studentships.