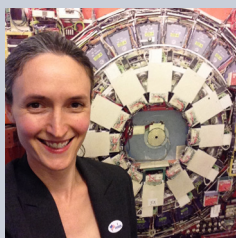


Exploring the fundamental nature of the Universe



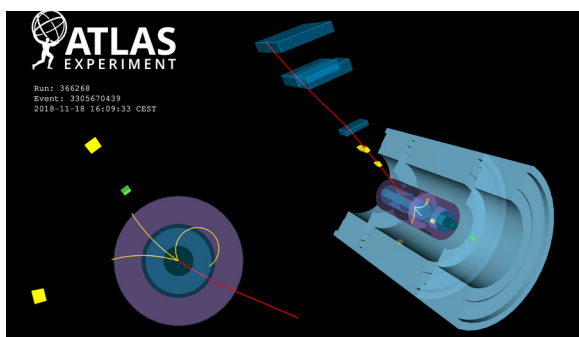
Sarah Demers
Professor

Sarah Demers uses tau leptons to probe for and characterize physics beyond the Standard Model with the ATLAS experiment and hunts for signs of new physics at the Mu2e Experiment.

Demers is a Fellow of the American Physical Society (APS), holds a number of leadership positions in both the ATLAS and Mu2e collaborations, and served on the national Particle Physics Project Prioritization Panel (P5).

Demers received the Yale Provost Teaching Award and the Yale Poorvu Family Award for Interdisciplinary Teaching. She is the Director of Undergraduate Studies for Yale Physics.

Demers is engaged with bringing science to the public realm and advocating for the equality of women in science through radio programs, op-eds, podcasts, talks, and outreach experiences.



ATLAS

The ATLAS experiment is a detector located at the Large Hadron Collider (LHC) at the European Organization for Nuclear Research (CERN) in Switzerland.

The interactions in the ATLAS detectors create an enormous flow of data. To reduce the data volume, ATLAS uses an advanced trigger system to tell the detector which events to record and which to ignore. The Demers group develops the ATLAS trigger system and focuses on using tau leptons—a third-generation particle with a lifetime that is only a fraction of a second—to probe for and characterize physics beyond the Standard Model.

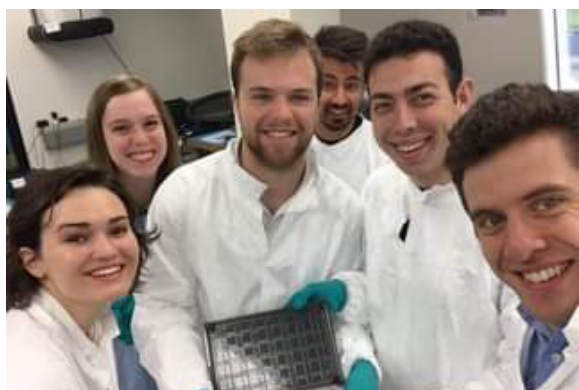


Demers has held many leadership roles in ATLAS. She has served on three ATLAS Editorial Boards and was appointed to the ATLAS Collaboration Board Chair Advisory group. She was a Large Hadron Collider Physics (LHCP) Conference Chair, and hosted the US ATLAS Summer meeting at Yale in 2023.



Demers is the ATLAS Deputy Data Preparation convener, was formerly a co-convener of the ATLAS Upgrade Physics group, was co-lead on the ATLAS Data Quality Group, and is the Chair of the US ATLAS Institute Board. With her leadership, Yale is an ATLAS Trigger and Data Acquisition Institute with design and validation responsibilities.

Muon-to-Electron Conversion Experiment (Mu2e)



Mu2e, located at Fermilab in Illinois, will search for the conversion of a muon directly to an electron in the field of a nucleus. This process, all but forbidden in the Standard Model, is enhanced in some compelling extensions to the Standard Model and a signal at Mu2e would be a clear sign of new physics. The Demers group is heavily engaged with development on the Mu2e trigger, including writing and optimizing many algorithms and leadership in the Trigger and Data Acquisition group. Demers is on the Mu2e publications board. She also led the “Engaging Non-Experts” group to help new people transition into the collaboration by developing computing tutorials and documentation.