

# Exploring the fundamental nature of the Universe



**Paul Tipton**  
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Professor of Physics*

Paul Tipton questions existing scientific models of the physical Universe and searches for new understanding of how the Universe works, discovering and characterizing new particles and searching for other phenomenon beyond the Standard Model of physics.

Tipton is an APS Fellow. He has been awarded the NSF Young Investigator Award, the DOE Outstanding Junior Investigator Award, and teaching excellence awards.

Tipton was the co-convenor of the CDF Top and B Quark Physics Group; the Head of Fermilab's CDF group for SVX; a member of the Physics Advisory Committee at Fermilab; and of the Editorial and Planning Committee for the journal *Annual Review of Nuclear and Particle Science*. He is a former Chair of the Yale Physics Department.



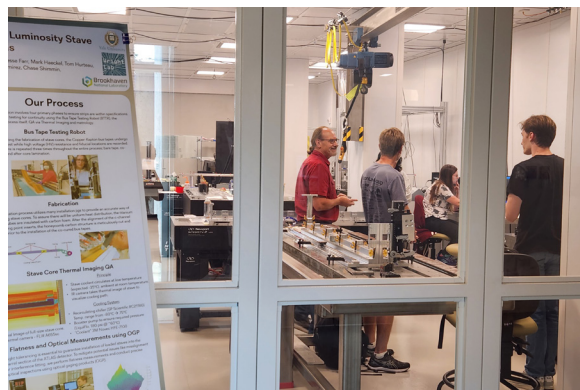
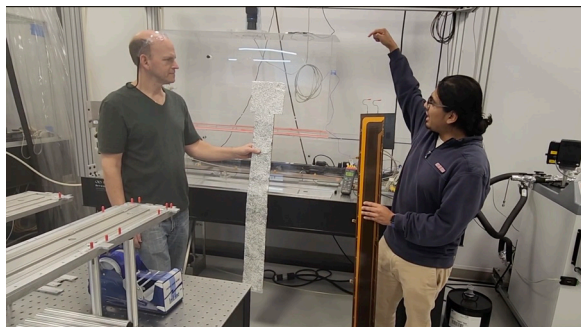
## ATLAS Stave Core Production



In order to probe further into unexplored physics territory, scientists seek to collect more collision data per second. The Paul Tipton group accomplishes this through a series of staged upgrades of both the Large Hadron Collider (LHC) at CERN in Switzerland and the ATLAS detector.

In a Wright Lab clean room, a research team led by Tipton is fabricating essential components of a new particle detector that will track the path of charged particles as they leave the collision point of the LHC. Tipton's team, part of the ATLAS collaboration, is working on a schedule such that the new particle tracker will be installed at CERN in 2026.

The Tipton group has been conducting R&D and prototyping the construction of state-of-the-art low-mass structures to hold sensors (i.e., particle detectors) that will track particles as they leave the interaction point. The structures, called stave cores, are the basic building block of the new tracking detector for ATLAS. The stave cores precisely locate the sensors, while also providing cooling and electrical connections into and out of the interaction region.



The team plans to fabricate approximately 225 stave cores, then ship them to Brookhaven National Lab, where the sensors will be mounted on them, before their journey on to CERN, where they will be installed in the upgraded ATLAS detector.