

# Special NSF+ASET Colloquium

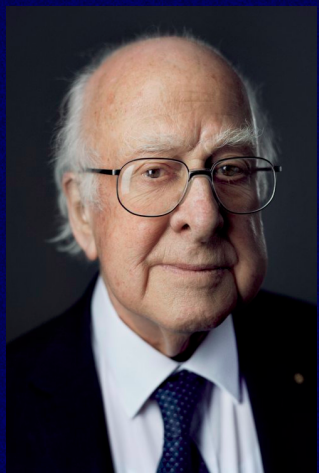
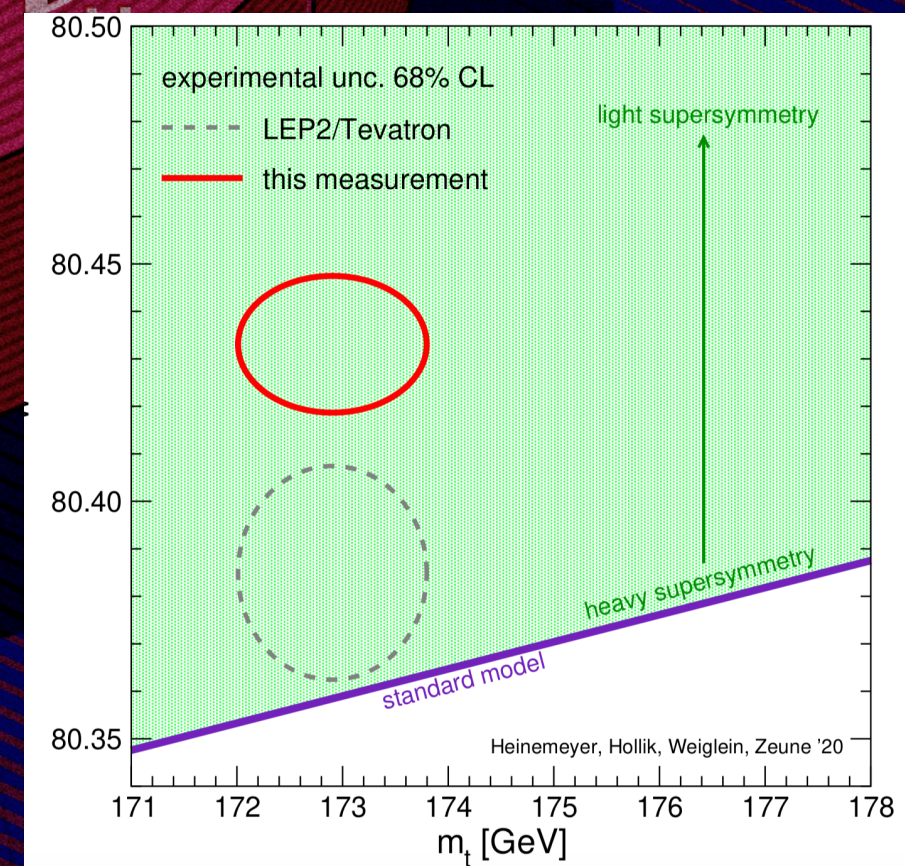
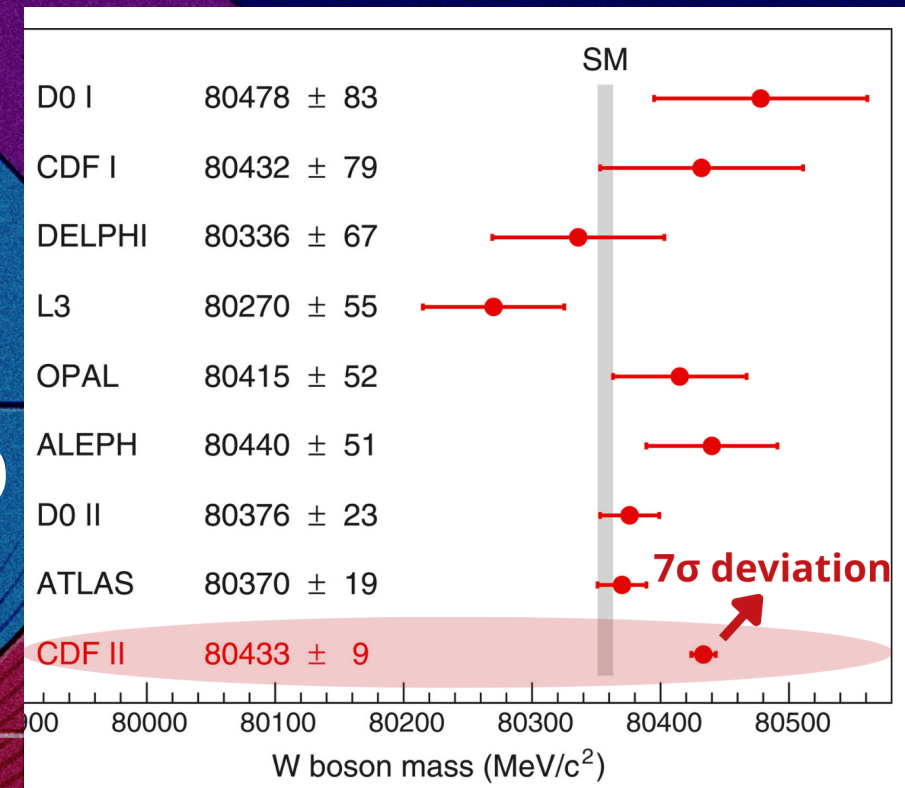
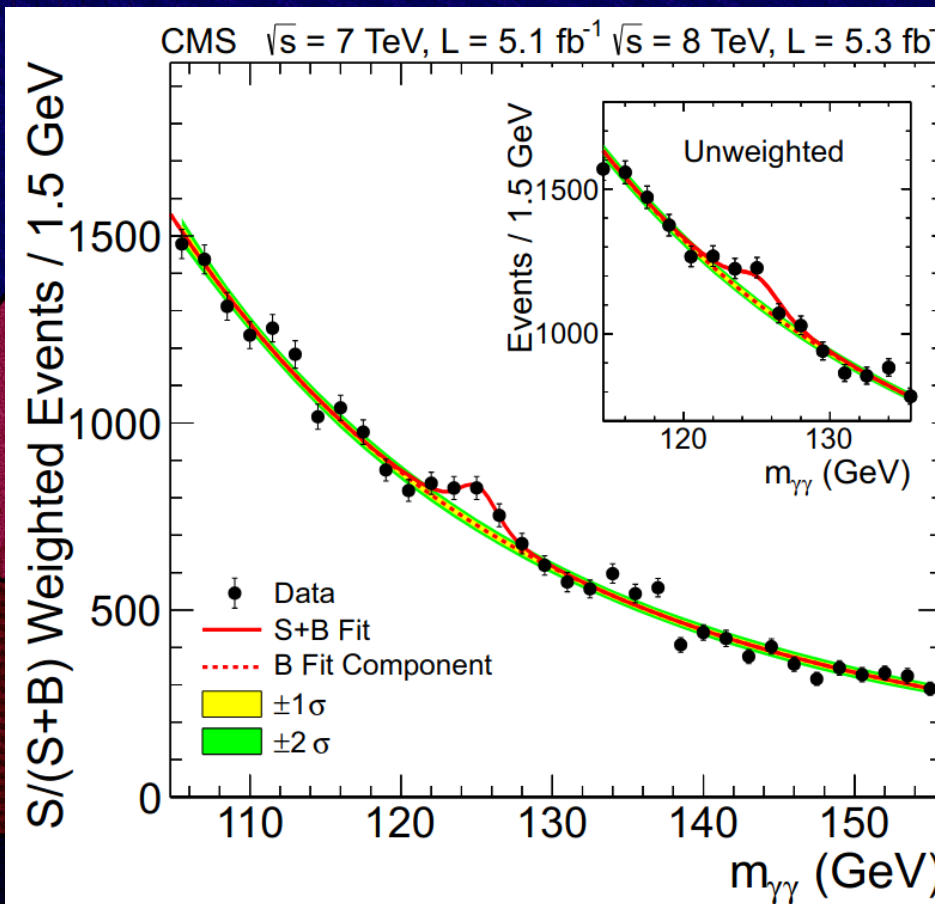
July 5, 2022 (Tuesday)

4:00 PM

Homi Bhabha Auditorium

YouTube Live:

<https://youtu.be/CMOK7UfDQ80>



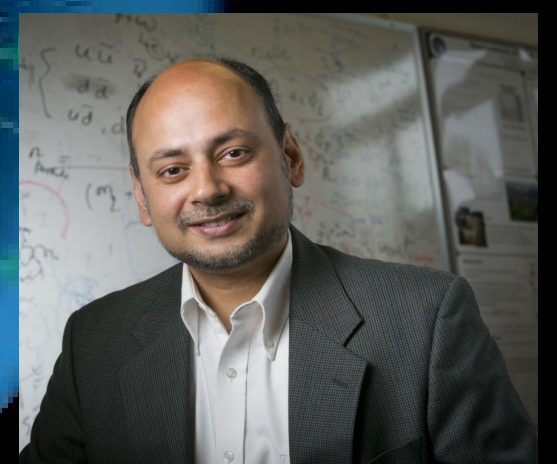
## The Higgs is Not Enough Verdict from the Heavyweight W Boson

### Abstract

The Standard Model has been a crowning achievement of fundamental physics, culminating in the discovery of the Higgs boson in 2012. As the theory of the building blocks of matter and forces at the quantum level, it has been the most successful theory in all of science – until the recent measurement of the W boson mass, which clearly disagrees with the Standard Model. This is reminiscent of a similar disagreement observed with classical physics a century ago – the observation of the atomic nucleus by Rutherford – which paved the way for the emergence of quantum mechanics and defined modern physics. Therefore, this upset to the Standard Model may well point towards exciting new discoveries in particle physics for years to come. In this presentation we will discuss the Standard Model, the crucial role of the W boson, and how it has become the harbinger of new laws of nature.



### About the Speaker



Prof. Ashutosh Kotwal is an eminent experimental particle physicist who has spearheaded a worldwide effort to precisely measure the mass of the W boson, a messenger of weak nuclear force. He is the Fritz London Professor of Physics at Duke University in the US. Prof. Kotwal is the recipient of the Outstanding Junior Investigator Award from the US Department of Energy, and of the Alfred P. Sloan Foundation Fellowship. He was elected Fellow of the American Physical Society in 2008, and Fellow of the American Association for the Advancement of Science in 2012.