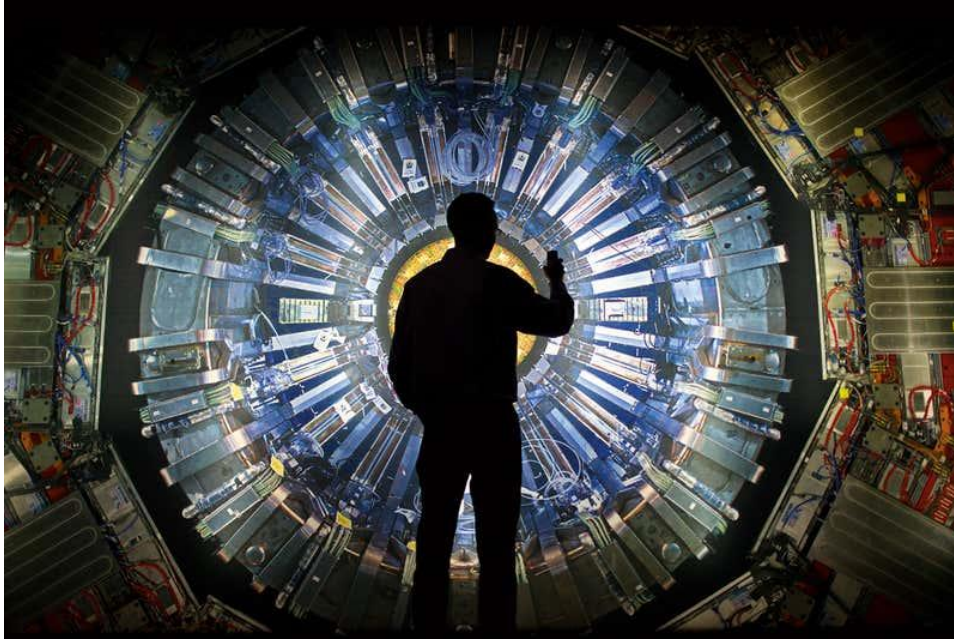




# COLLOQUIUM



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## **Quest for Nature: Fifty Years of Discoveries in High Energy Physics**

### **Abstract**

For the past half a century, high energy physics has enjoyed the uninterrupted success of discoveries, signified by the recent discovery of the Higgs boson at the CERN Large Hadron Collider (LHC). Our understanding of the microscopic world has been deepened to a scale as short as  $10^{-9}$  nm. Yet there are still many outstanding questions to be answered. In this lecture, I will first review the historical discoveries in the past half a century, and then contemplate on the profound questions that still puzzle high energy physics world, especially those associated with the Higgs physics, including the nature of the electroweak phase transition, stability of the electroweak scale, the possible connection with dark matter, and the potential impact on the early universe cosmology. We argue that the collective efforts of future high energy physics programs, in particular the future colliders, hold great promise to uncover the laws of nature to a deeper level.

**3:00 p.m. – 4:00 pm Friday, August 23<sup>rd</sup> McLane 162**