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### **Higgs and Beyond<sup>1</sup>**

JAMES PROUDFOOT, Argonne National Laboratory

On July 4th 2012, the ATLAS and CMS experiments announced the discovery of a new boson. Following analysis of the full dataset from LHC Run 1, the properties of this particle have been determined to be in agreement with those expected for the long-sought after Higgs boson, completing the particle family in the Standard Model. However, we know from fundamental arguments that a considerable degree of fine tuning is needed to make the particle masses fit what we observe. This talk will address the observation of the Higgs boson, what we have learned since this discovery, why we should consider physics beyond the Standard Model, and what physics may remain to be discovered such as a composite Higgs or Supersymmetry. To perform these searches the detector must deal with extreme conditions and this talk will address some of the experimental challenges to be faced and their possible solutions.

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