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Faculty

MARKUS KLUTE

Associate Professor



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Research Interests

Professor Klute's research interest is particle physics at the energy frontier, both in the design, construction and commissioning of particle detectors, and in the analysis of the data collected. In 2012 his group played a central role in the discovery of the Higgs boson using the CMS experiment at the LHC. The discovery sheds light on the fundamental question of the origin of elementary particle mass and the mechanism of electroweak symmetry breaking. The exploitation of the Higgs boson and direct searches for physics beyond the standard model at the LHC are the focus of his future research.

Biographical Sketch

Markus Klute joined the MIT Physics Department in April 2009 and is currently Associate Professor of Physics. He received his Diploma and Ph.D from Rheinische Friedrich-Wilhelms University, Bonn, Germany in 2004 with research on the OPAL, ATLAS and D0 experiments. After earning his Ph.D he joined MIT as a postdoc and later as a research scientist, and worked on the CDF and CMS experiments. In 2007 he accepted a position as Associate Professor with tenure at Goerg-August University in Goettingen, Germany, where he started a research group on the ATLAS experiment before coming back to MIT.

Selected Publications

- CMS Collaboration, "Evidence for the direct decay of the 125 GeV Higgs boson to fermions", **Nature Phys.** **10** (2014)
- CMS Collaboration, "Evidence for the 125 GeV Higgs boson decaying to a pair of tau

leptons", **JHEP 1405 (2014) 104**


- CMS Collaboration, "Measurement of inclusive W and Z boson cross section in pp collisions at $\sqrt{s} = 8$ TeV", **Phys.Rev.Lett. 112 (2014) 191802**
- Markus Klute et al, "First Look at the Physics Case of TLEP", **JHEP 1401 (2014) 164**
- CMS Collaboration, "Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC", **Phys.Lett. B716 (2012) 30-61**, hep-ex/1207.7235.
- Markus Klute, Remi Lafaye, Tilman Plehn, Michael Rauch, Dirk Zerwas, "Measuring Higgs Couplings from LHC Data", **Phys.Rev.Lett. 109 (2012) 101801**
- A. Abulencia et al., CDF Collaboration, "Measurement of the helicity fractions of W bosons from top quark decays using fully reconstructed t anti-t events with CDF II", **Phys.Rev.D75:052001,2007.**, hep-ex/0612011.
- V. M. Abazov et al., D0 Collaboration, "Measurement of the ttbar production cross section in ppbar collisions at $\sqrt{s} = 1.96$ TeV using kinematic characteristics of lepton + jets events", **Phys.Lett.B626, 45 (2005)**, hep-ex/0504043.
- S. Asai et al, "Prospects for the Search for a Standard Model Higgs Boson in ATLAS using Vector Boson Fusion", **Eur.Phys.J. C32S2 (2004) 19-54**, hep-ph/0402254.
- G. Abbiendi et al., OPAL Collaboration, "Decay mode independent searches for new scalar bosons with the OPAL detector at LEP", **Eur. Phys. J.C27:311-329**, 2003.

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