

**MARKUS
KLUTE:**

Welcome to this short recording of our 8.701 lecture. With this short discussion, I want to introduce the teaching staff to this course, the instructor, which is myself, Markus Klute, and our TA Justin.

So I am faculty in the physics department since 2009. I received my diploma, which is my undergraduate study, in Germany and also my PhD from the University in Bonn. I-- with research on the OPAL experiment, which is an experiment on the large electron positron collider at CERN, on the ATLAS experiment, which is in the Large Hadron Collider, also at CERN, and also on the D0 experiment, which was one of the experiments at the Tevatron in Chicago at Fermilab.

So after my PhD, I joined MIT as a postdoc, and later as a research scientist. And I worked on the CDF experiment at the Tevatron and the CMS experiment at the Large Hadron Collider. In 2007, I accepted a faculty position in Germany, where I spent about a year, before coming back to MIT.

It's not a surprise-- this is CV-- that I-- my interest is in particle physics at the energy frontier. I work on design, the construction, the commissioning of detectors. We made major contribution to the hadronic calorimeter in CMS and also the data acquisition system. Most recently, I was leading the software and computing project within the CMS experiment.

Most exciting-- the physics. And in 2012, we were able to discover the Higgs boson with the CMS experiment. And so ATLAS had a similar experience. And since then, we were able to look more deeply, more closely into how the Higgs boson-- case. We were able to show couplings to W and Z bosons, to photons via loops of top quarks and W bosons. But then we looked into whether or not Higgs bosons couple of fermions like electrons. So we were able to show couplings to taus-- those are the heaviest brothers of the electrons-- and most recently, couplings of Higgs bosons to muons, which are second-generation particles.

So this exploitation and exploration of the Higgs boson is really at the center of my research portfolio. We don't just spend our time analyzing the data from the LHC, but we also look whether or not new machines can teach us important information about the Higgs boson. When I'm not doing research, I have a little family who I like to spend time with.

I used to play soccer quite a bit, and also tennis. But when you get older, those kind of contact interactions are not very useful for you anymore. You get injured quite a bit. So I left it to the running part of those activities. And I picked up running quite a bit. In a couple of weeks into the semester, everyone, my and the first virtual Boston Marathon-- so some of those videos might have a little bit of a fighting face in front of you. But I hope everything is going well.

Our teaching TA is Justin. Justin is a graduate student in my group. He's in the second year. He took this very class with Mike Williams last fall. So he should be well-prepared to guide you and answer your questions.

He received his undergraduate degree from the University of Michigan at Ann Arbor, where he was working on the g-2 experiment. We'll probably talk about those kind of experiments later in the class as well. Recently, he has been taking up running as well. But he spends, also, time on rowing and hiking. So we, both of us, look forward to meeting you in this first class on Tuesday and hope that we have a good time together with 8.701.