SUMMER STUDENT LECTURE PROGRAMME 2018

Lecture Title	Foundations of Statistics
Lecturer's name	Andreas Hoecker
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Short CV	I am experimental physicist at CERN and member of the ATLAS experiment - one of four large detectors at CERN's Large Hadron Collider. During my career, I have worked on several experiments at CERN and Stanford (USA), and I have been interested in particle physics phenomenology. As statistics is everywhere in our field, it is customary that physicists develop statistical procedures and tools with the aim to improve the sensitivity of experimental measurements and to interpret the results. Through my experimental work I have thus been directly involved with most of the topics discussed in the lecture.
Lecture Content	The lecture provides a general introduction to probability and statistics. It covers probability distributions and their properties, measurement errors and propagation, probability axioms and hypothesis testing, parameter estimation and confidence levels, maximum likelihood fits, Monte Carlo methods, data unfolding, as well as multivariate techniques and machine learning. It sounds dry, but should be fun!
Pre-requisites: earlier series of lectures that the students should follow	None
Other pre-requisites:	