Universität Hamburg
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CHAMPP
CENTER IN HAMBURG FOR ASTRO-, MATHEMATICAL AND PARTICLE PHYSICS

LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL

Winter Term 2019/2020

Advanced Particle Physics

E. Gallo, P. Gunnellini

Course Description:

The course covers experimental and theoretical aspects of elementary particle physics. After an introduction into the relevant concepts of the Dirac theory, symmetries, conservation laws and Feynman diagrams we will discuss more advanced topics including electroweak unification, the Higgs mechanism and physics beyond the Standard Model. The discussion is accompanied by experimental aspects, explaining the major discoveries in the 20th and 21st century, for example the discovery of the Higgs boson at the Large Hadron Collider at CERN.

Literature:

- D. Griffiths, *Introduction to Elementary Particle Physics* (2009)
- M. Thomson, *Modern Particle Physics* (2013)
- B. R. Martin and G. Shaw, *Particle Physics* (2019)
- A. Bettini, *Introduction to Elementary Particle Physics* (2008)
- F. Halzen and A. D. Martin, *Quarks and Leptons, An Introductory Course in Modern Particle Physics* (1984)

Date and Place:	Tue, 10:30–12:00, SR 2, Jungiusstr. 9 Fri, 14:15–15:45, SR 2, Jungiusstr. 9
Starting on:	15 October 2019