PHYSICS 332, Spring 2017

QUANTUM FIELD THEORY : Standard Model (SM) and Beyond

Course meeting: MW 11:30 - 12:50, Hewlett 102

Instructor: Prof. Renata Kallosh kallosh@stanford.edu Varian 382
Office hour Monday 4-5 pm

Outline of topics

Non-abelian symmetry, including Lie groups in particle physics, Faddeev-Popov quantization. BRST symmetry and quantum Yang-Mills theory. Gluons and spinor-helicity formalism. Week interactions: neutrino, CP violation, baryogenesis. Anomalies in general, and absence of gauge anomalies in SM. LHC and Beyond SM.

Advanced topics: cosmological concordance model, dark matter and dark energy, primordial gravity waves, waves from black hole merger, AdS/CFT.

Textbooks : Peskin and Schroder, An Introduction to Quantum Field Theory,
M. Schwarz, Quantum Field Theory and Standard Model

The textbooks as well as additional books on QFT will be available in the library on reserve for Physics 332
P. Ramond
S. Weinberg
A. Zee
F. Mandl and G. Shaw
others

We will have regular home works during the term. You may cooperate on HW’s as well as ask questions during the office hour. There will be no mid-term and no final written exam. Instead, each student will make a 20 min presentation on advanced topics related to QFT during the last classes. The list of topics and references will be suggested.