

# IMPRS EPP

**17th Block Course  
of the  
International Max Planck Research School  
on Elementary Particle Physics**

June 29th – July 1st and July 6th – 8th, 2011

Max-Planck-Institut für Physik, Freimann

10:00 AM – 11:55 AM, Seminar room 313

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## **Feynman Diagrams For Pedestrians**

This set of interleaved lectures and exercises will (re)introduce working experimental particle physicists to the techniques used for computing simple cross sections in the standard model and its extensions. The approach is deliberately pedestrian with an emphasis on real world applications.

After an introduction, gradually more and more time will be spent actually computing stuff in order to build confidence and gain intuition for (new) physics signals in cross sections.

Outline:

- Introduction (scattering amplitudes, Lorentz transformations, Schroedinger equation)
- Asymptotic States (Free particles and anti-particles, Klein-Gordon equation, Dirac equation, gamma matrices)
- Interactions (S-matrix, Feynman rules, cross sections)
- QED (Trace techniques, electroproduction cross section computation)
- QCD (3-jet production cross section computation)
- Standard Model (Higgs production cross section computation)

No registration is needed.