



Lecture Course in the Integrated Research Training Group (IRTG)  
of the SFB 676 “Particles, Strings and the Early Universe”

Winter Term 2016/2017

# WORKSHOP SEMINAR

## Particles, Strings, & the Early Universe

### “Axions”

C. Grojean, T. Konstandin, A. Ringwald, G. Servant, A. Westphal

#### Timeline:

- 25.10 Strong CP problem,  $\Theta$  dependence of QCD vacuum energy, neutron EDM
- 01.11 Axion solution and generic axion effective lagrangian, EDM with axion
- 08.11 Axion models and low energy couplings
- 15.11 High temperature potential
- 22.11 Astrophysical constraints
- 29.11 Axion cosmology: PQ breaking & inflation, isocurvature perturbations
- 06.12 Axion relic density, from misalignment mechanism and thermal axions
- 13.12 Axionic Strings and domain walls
- 19.12 Axion DM and large Scale Structures, Axion mini clusters
- 10.01 Axion-like fields as inflaton
- 17.01 Axions in String Theory
- 24.01 Detection techniques and Searches I
- 31.01 Detection techniques and Searches II
- 07.02 Relaxion

**Date and Place:**

Tue, 11 – 12:30  
SR2, Building 2a at Bahrenfeld/DESY

**Starting on:**

25.10.2016

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