| Date: | Monday, 26 November 2018 | |
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| Time: | 09:40 - 11:00 | |
| Speaker: | Andreas RINGWALD | |
| Institution: | Theory Group, Deutsches Elektronen-Synchrotron (DESY) | |

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SMASH Variations: Bottom-Up versus Top-Down

Abstract:

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Every Pechei-Quinn(PQ)-like extension of the Standard Model (SM) solves two problems of particle physics and cosmology in one smash: (i) the angular degree of freedom of the PQ-field - the axion field - solves the strong CP problem and (ii) its particle excitation - the axion - may be the main constituent of cold dark matter, if the PQ symmetry breaking scale is large enough. Recently, it has been established that also a third problem can be solved eventually in every PQ-like extension of the SM: (iii) the modulus of the PQ field or a mixed combination of it with the modulus of the Higgs field can act as a non-minimal chaotic inflaton candidate, realising Higgs portal inflation. Moreover, adding right handed SM singlet neutrinos to a PQ-like extension of the SM, one may in addition explain (iv) neutrino masses and mixing by the seesaw mechanism and (v) baryogenesis by leptogenesis. In this talk we discuss a few explicit UV completions of the SM which feature the Axion, the Seesaw and Higgs portal inflation - dubbed SMASH - and elucidate their predictions for the next generation of axion dark matter experiments. Particular emphasis will be given to GUT SMASH variations.

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