Contribution ID: **120** Type: **Oral**

CosmoBit –Towards Simultaneous Global Fits of Cosmology and Particle Physics

Thursday 5 December 2019 16:45 (15 minutes)

Upcoming data from experiments like the LSST, Euclid or the SKA will help to greatly advance the precision of cosmological parameter estimation in the next decade. However, the yet unknown nature of Dark Matter and Dark Energy hint for the need to extend the current standard model of cosmology and particle physics. Non-standard scenarios can leave imprints on cosmological, astrophysical as well as laboratory measurements, e.g. neutrino self-interactions or the presence of an Axion-like particle (ALP) as a Dark Matter candidate. To maximise the knowledge one can obtain from present and upcoming data it is therefore important to simultaneously consider all measurements constraining a specific model at the same time. In this talk I will present a tool designed for this purpose: CosmoBit, a module of GAMBIT – the Global And Modular BSM Inference Tool. As an example I will present constraints on a keV scale ALP arising from complementary probes from BBN, the CMB, X-ray emission from the galactic centre and photon bursts from supernovae.

Authors: RENK, Janina (Stockholm University); STOECKER, Patrick (Institute for Theoretical Particle Physics and Cosmology, RWTH Aachen)

Co-authors: SCOTT, Pat (The University of Queensland); KAHLHOEFER, Felix (RWTH Aachen)

Presenter: RENK, Janina (Stockholm University)

Session Classification: Parallel

Track Classification: Cosmology