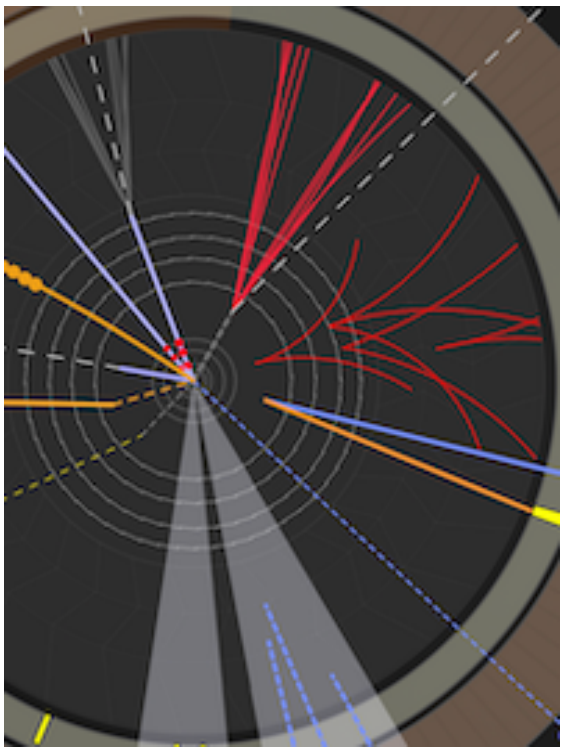
LLP workshop 2019 - Workshop on Long lived particle searches with various signatures



Report of Contributions

https://indico.global/e/10192

Contribution ID: **1** Type: **not specified**

Opening remarks

Friday 22 November 2019 10:30 (5 minutes)

Presenter: SAWADA, Ryu (University of Tokyo (JP))

Contribution ID: **2** Type: **not specified**

Experimental contribution (tentative)

Contribution ID: **3** Type: **not specified**

Theory overview (15'+5')

Friday 22 November 2019 10:35 (20 minutes)

Presenter: SHIRAI, Satoshi (Kavli IPMU)

Contribution ID: **4** Type: **not specified**

Experimental overview (25'+5')

Friday 22 November 2019 10:55 (30 minutes)

Presenter: OIDE, Hideyuki (Tokyo Institute of Technology (JP))

Contribution ID: **5** Type: **not specified**

LLP searches in Belle II (tentative)

Contribution ID: **6** Type: **not specified**

Probing the right handed neutrinos at the colliders: prompt and displaced (remote) (20'+5')

Friday 22 November 2019 16:15 (25 minutes)

Presenter: DAS, Arindam (Osaka University)

Contribution ID: **7** Type: **not specified**

Hidden Monopole Dark Matter via Axion Portal and its Implications for Direct Detection Searches and Beam-Dump Experiments (20'+5')

Friday 22 November 2019 12:40 (25 minutes)

Presenter: HO, Shu-Yu (Tohoku University)

Contribution ID: **8** Type: **not specified**

Dedicated detectors at CERN: SHiP and FASER (25'+5')

Friday 22 November 2019 13:05 (30 minutes)

Presenter: SATO, Osamu (Nagoya University (JP))

Contribution ID: **9** Type: **not specified**

Experimental contribution

Contribution ID: **10** Type: **not specified**

ATLAS disappearing track (20'+5')

Friday 22 November 2019 14:25 (25 minutes)

Presenter: KAJI, Toshiaki (Waseda University (JP))

Contribution ID: **11** Type: **not specified**

Exotic searches using LLP in ATLAS (remote) (25'+5')

Friday 22 November 2019 16:40 (30 minutes)

Presenter: SHIRABE, Shohei (Tokyo Institute of Technology (JP))

Contribution ID: **12** Type: **not specified**

Testing leptogenesis at LHC and SHiP (20'+5')

Friday 22 November 2019 13:35 (25 minutes)

Presenter: EIJIMA, Shintaro (KEK)

Contribution ID: **13** Type: **not specified**

Dark Matter Dynamics Characterizing Long-lived Particles (20'+5')

Friday 22 November 2019 14:00 (25 minutes)

Presenter: CHAKRABORTI, Sreemanti (Indian Institute of Technology Guwahati)

Contribution ID: **14** Type: **not specified**

Closing remarks

Friday 22 November 2019 17:20 (5 minutes)

Presenter: JINNOUCHI, Osamu (Tokyo Institute of Technology (JP))

Contribution ID: **15** Type: **not specified**

SUSY displaced vertex in ATLAS (20'+5')

Friday 22 November 2019 15:50 (25 minutes)

Presenter: MIZUKAMI, Atsushi (High Energy Accelerator Research Organization (JP))

Contribution ID: **16** Type: **not specified**

Cornering Higgsino at the LHC (20'+5')

Friday 22 November 2019 15:25 (25 minutes)

Presenter: SHIRAI, Satoshi (Kavli IPMU)

Contribution ID: **17** Type: **not specified**

Discussion / buffer

Contribution ID: **18** Type: **not specified**

Discussion / Buffer

Contribution ID: **19** Type: **not specified**

Discussion buffer

Contribution ID: **20** Type: **not specified**

Dark Matter Dynamics Characterizing Long-lived Particles

We present a scenario capable of addressing dark matter (DM) through freeze-in and freeze-out mechanisms, depending on the region of the parameter space considered. In DM dynamics, the model features an interplay of thermal production along with sizeable production through feeble decay of associated dark fermionic partner, which finally freezes out to right relic density for a wide range of masses and couplings. Apart from the fermionic DM candidate, the model introduces two charged partners, one fermionic and another scalar, which often have delayed decays leading to distinct characteristics of long-lived particles (LLP) in the colliders like the LHC.
Our analysis shows that within the present scenario, LLP of decay length that could be probed at the LHC experiments are compatible with DM mass ranging from a few GeV to close to a TeV, as opposed to the requirement of keV-MeV DM in simple FIMP scenarios with LLP. With the change in the dark sector coupling, the LLP signatures change due to change in decay length. In addition, the model presents hitherto unexplored interesting possibilities in the LLP searches, like (i) LLP to LLP to SM cascade decays, which could be searched for within the LHC detectors and (ii) heavy neutral particle decaying within MATHUSLA with two bjets and large missing energy.

Author: CHAKRABORTI, Sreemanti (Indian Institute of Technology, Guwahati)

Co-authors: MARTIN, Victoria (University of Edinburgh); POULOSE, Poulose (Indian Institute of Technology, Guwahati)

Presenter: CHAKRABORTI, Sreemanti (Indian Institute of Technology, Guwahati)