

# Introduction to BSM session

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5 November 2019

# BSM session of PBC working group meeting 5-6 November 2019

- Main goal is to review the status of projects
- Additional input to European Strategy Update drafting session in January 2020
- Agenda on <https://indico.cern.ch/event/827066/>
- BSM sessions: 5 November 2019 14:00-18:00
- 6 November 2019 9:00-12:00

# BSM sessions 5-6 November 2019

- Talks on the progress of the projects since January 2019, which is important to deliver to European Strategy Update
  - Requests for talk from the projects
  - Requests from the community and PBC coordination to clarify specific questions and discussions
- No interest to repeat the presentations from PBC in January 2019 and documented already in BSM Working Group Report (arXiv:1901.09966) and accepted in Journal of Physics G
- No new document to be produced, the deliverables will be the talks and documents uploaded on INDICO site
- New updated sensitivity plots (thanks to Gaia) are available on the site: <https://indico.cern.ch/event/859323>

# BSM Projects presented in January 2019 and with updates at this meeting

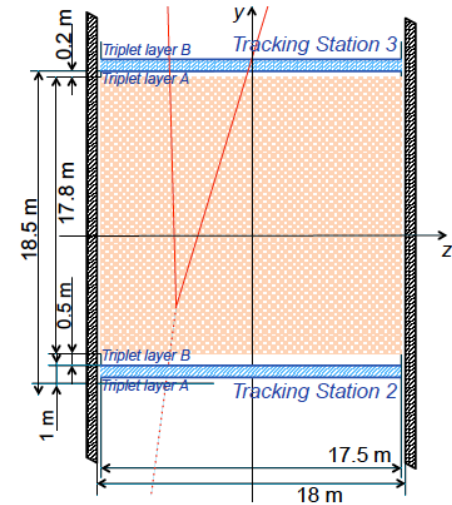
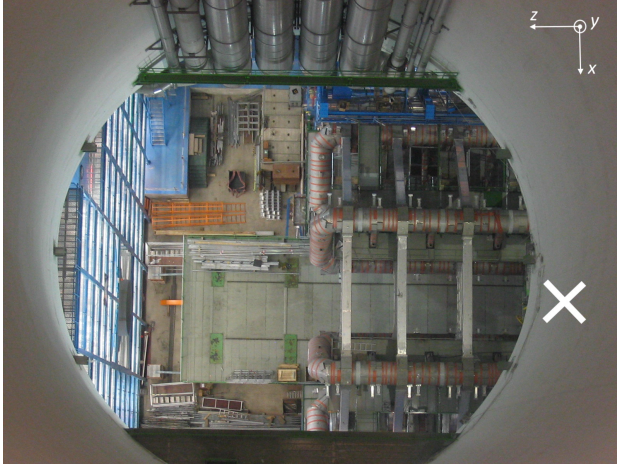
- BabyIAXO:
  - Physics Review Committee of DESY endorsed BabyIAXO proposal <https://gifna.unizar.es/iaxo/?p=1010>
- CODEX-b
  - EOI for 2019, include light hadron decays
- SHIP
  - muon flux and charm measurements, BDF Yellow Book contribution, Comprehensive Design Study (CDS) end of 2019
- NA64
  - cover significant part of  $^8\text{Be}$  anomaly, visible Dark Photon modes
- KLEVER - expression of Interest in preparation for CERN SPSC
- REDTOP – better background rejection due to better simulation
- LDMX - progress in detector design, on accelerator session eSPS
- FASER
  - approved by CERN LHCC and Research Board
- MATHUSLA - Physics Case published, revision: arXiv:1806.07396

# BSM Projects in arXiv:1901.09966 and presenting updates at this meeting

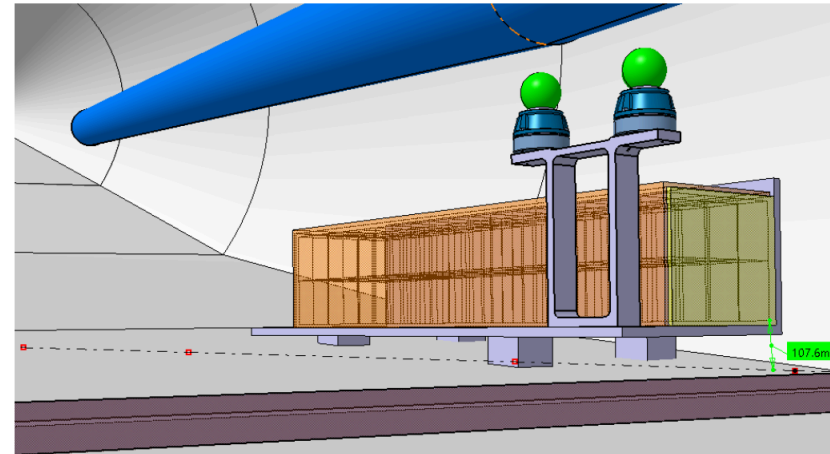
- AWAKE++ (was in accelerator session in January 2019)
- MDM/EDM of heavy baryons and tau lepton
  - Include tau, workshop in Milano 3-4 October 2019  
<https://agenda.infn.it/event/19523>
- milliQan
  - news from simulations and demonstrator

# New BSM Projects

- ANUBIS
  - Proposal to search for long-lived neutral particles in CERN service shafts



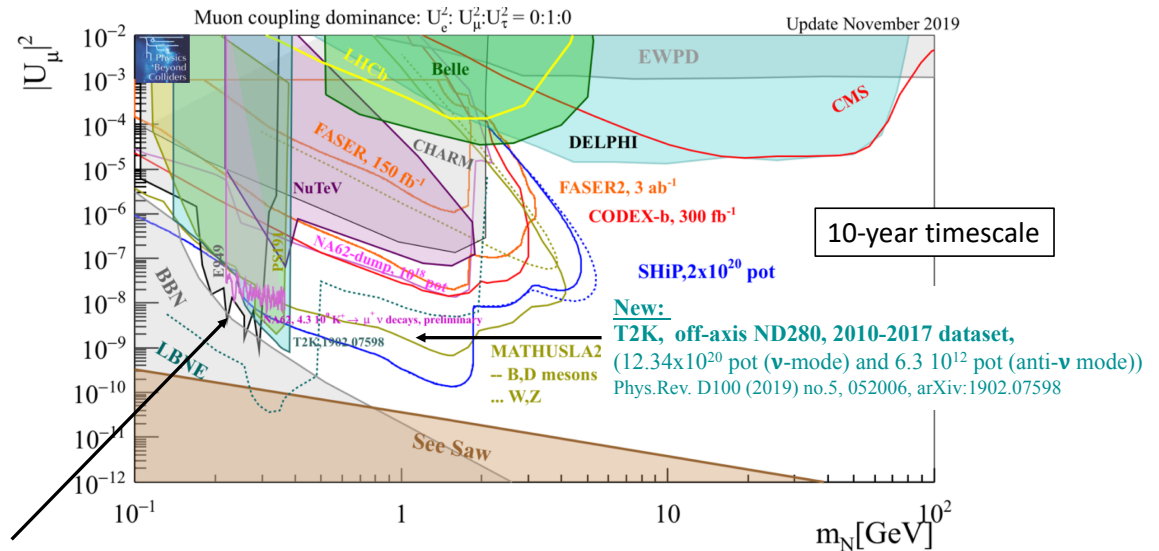
- XSEN
  - LHC neutrinos with emulsion detector



# BSM Reviews

- In accelerator session: Beam Dump Facility (including TauFV and PASSAT)
- LLP at LHC (James Beacham)
  - LLP workshop May 2019 <http://indico.cern.ch/event/792346>
- Feebly Interacting Particles: what's new since January 2019 (Gaia Lanfranchi)

## Fermion Portal: HNL coupled to the second lepton generation (BC7)



New:  
 NA62 in kaon mode, preliminary  
 1.2x10<sup>12</sup> K<sup>+</sup> decays in FV (30% of 2016-2018 dataset)  
 [Goudzovski, KAON2019]

T2K has similar performance as E949, NA62 slightly worse  
 Both can improve in the coming years.