

Dark Interactions: Standard Model Measurements and Searches for Dark Sector States

Perspective from theory and experiment

Summary of meeting on October 1, 2025

Present:

Soeb, Mounia, Heba, Chilufya, Mohamed and Kétévi.

Salient points:

1. Kétévi will contact Patricia about the poster and Indico page of the event
2. We will meet again in approximately 2 weeks
3. Until our next meeting, we suggest using this googledoc to make progress
 - a. Comment on the title and scope of the event
 - b. Comment on the acronym and make suggestions for change
 - c. Within the scope, list the major topics that you would like to see developed in the scientific agenda. **See below for details. Your inputs are needed for the items in red.**

Suggested topics to be included in the scientific program

1. Standard Model & exotic measurements (e.g., Quantum Entanglements, H -> invisible, exotic Higgs decays, etc.).
2. BSM searches for dark sector states (including dark matter, dark energy) in the interplay of particle physics.
3. Astrophysical and cosmological probes of dark sectors, collider and non-collider search for dark sector states.
4. Precision measurements and deviations from SM and interpretation for BSM.
5. BSM searches with high-energy neutrinos and gamma rays.
6. Neutrinos and the dark sector
- 7. Please add other topics within the suggested scope**
- 8. Differential Geometry and differential equations.**
- 9. Quantum sensors for new physics**
- 10. Detector upgrades for HL-LHC, future colliders/experiments...[perhaps with a focus on sensitivity to DM, SM precision measurements and interpretation for BSM?]**

The date of the event is October 5-9, 2026. The venue is CERN

The charge of this Committee includes

- Decide whether to change the title of the event and/or the acronym (DI2026).
 - **Comment if you wish to change the acronym and suggest a change**
- Worry about other logistics such as poster, website, Indico, and proper advertisement of the event, appropriate registration fees, etc.
 - **Kétévi will discuss with Patricia and about this**
- Agree on the scientific program sessions.
 - **Add other topics that you wish to develop —see above**
 - Assign session leaders to develop the details further. We will do this a bit later.
- Seek travel funds to cover some participants.
- Share the tasks among yourselves as co-chairs of the event.
 - **Let's start by listing the topics of interest, with scope**
- etc.

Some previous Dark Interactions Workshops

<https://inspirehep.net/conferences/2804210>

<https://www.bnl.gov/darkinteractions/>

<https://indico.bnl.gov/event/3478/>

This is the area where Patricia has moved previous workshop indico's
<https://indico.cern.ch/category/19962/>