CERN Theory Workshop on
Topological Effects in the
Standard Model: Instantons,
Sphalerons and Beyond
at the LHC

Prof. Dr. Matthias Schott
Goals of the Workshop

- While the existence of topological effects within the Standard Model, such as QCD instantons or electroweak Sphaleron signatures is well known, it is far from clear, if they can be experimentally observed.

- We want to discuss the possibilities to such probe effects at the LHC.
  - How robust are the theoretical predictions and which uncertainties are associated.
  - What are potential signatures at the LHC.
  - Are there other means to find hints such topological processes.

- Even though it is a CERN Theory workshop, also many experimentalists are joining… so keep this in mind during the discussions.

- Decay of an isotropic heavy mass object.
How to Participate?

- We all would have preferred to meet in person and have lively discussions during the workshop, in the coffee breaks …
  - Let’s try to make the best of the current situation via ZOOM

- Speakers/discussion chairs should have the video on during their talks/ sessions
  - Please test your sound/video system as well as the slide-sharing before

- Discussion time directly after the talk are reserved for questions to the understanding of the talk.

- Longer comments and discussions should happen in the dedicated round table discussions

How to ensure good discussions?

- If you want to speak, raise your Zoom-hand – you will be called by the discussion leader.

- You can use the chat to inform the session chairs about the point you would like to make

- Please speak only, when called (and remember we can block participants who forget this too often) and don’t forget to unmute
  - When speaking, it would be great if you could also turn on your camera.
Workshop times each day from 15:00 to 18:00, separated in two parts:
- Part I: Introduction Talks
- Part II: Round Table Discussion

Wednesday: QCD Instantons

Thursday: Electroweak Sphalerons

Friday: Collider Signatures

Virtual Workshop Photos will be taken now (Part I) and Friday afternoon (Part II)
General Discussion on Friday and Follow Up

- General discussion at the end of the workshop with John Ellis and Edward Shuryak
  - come back to selected points of the sessions
  - summarize and discuss new points or make overall concluding remarks.

- We encourage all workshop participants to send us after the workshop their take-away message, follow-up points, future benchmarks etc.
  - If successful we plan to organize follow-up workshop to accompany further theory developments and the starting experimental searches at LHC.
If you have any questions or problems, do not hesitate to contact us.

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