# BSM studies @ LHeC and FCC eh
# Introduction

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# Up-coming events: workshop!

- LHeC and FCC-eh https://indico.cern.ch/event/639067

- The workshop is dedicated to discuss the status and prospects for the preparations on energy frontier ep and eA scattering
  using the CERN hadron colliders, the LHC and its possible successor the HE-LHC or/and the FCC.

- please take note that the pre-booking of hostel rooms runs out tomorrow Thursday 10.8. at 2pm, while hotels in the surrounding appear full already. If you intend to come but have no time to register for a room now, please let us know such that we may hold a room on your name.
  - The workshop programme is coming together, please consult the web. For organisational reasons we would very much appreciate a registration by the participants.

# Top and BSM Physics Session

- Scheduled for Monday afternoon 4.30 – 6 pm
  - plan to have 3-4 talks max (15') + summary
- Other sessions are of course extremely relevant

- Will also discuss about plans for the 2018 CDRs
  - also in preparation for the European Strategy 2020

- Worth considering some new 'parameters' in the on-going studies:
  - High Energy (HE) option → now something to be also considered (HE-LHC proton beam ~ 27 TeV)
  - Lower electron energy sets: 50 GeV instead of 60 GeV

# On-going studies (what we are aware of)

- Heavy/sterile neutrinos
- long-lived particles (SUSY RPC)
- SUSY RPV
- top FCNC
- aTGC
- Singly and Doubled-charged Higgs
- Lepto-quarks
- Compositness, contact interactions, excited/heavy fermions
- Instantons

In progress
Uncovered (*)
Starting

https://twiki.cern.ch/twiki/bin/viewauth/LHeC/LHeCFCCehBSM

(*) in most cases, just need to consolidate old results. For SUSY RPV more can be done…

# Some details on the detector

- Peter Kostka is the main expert working on the detector layout.
  - Some details on it might be needed for the studies. However, the current description of the tracker is not fixed hence detailed pictures might not be available (several aspects of the tracker arrangement have to be changed with modifications of the IR - which is unavoidable and not solved).
- The current description of version0 - FCC-Berlin, version1 - tilted endcap-rings and for comparison the FCC-hh (version4) is accessible here:
- https://www.dropbox.com/s/oc7rnm1mu8fjs61/tkLayout-run.tar.gz?dl=0

One can access all easily (instructions in the next page)

# Instructions (from Peter)

1. unpack the archive:
2. goto:

   run/geometries/FCC-eh/FCCeh_Option0/results/

3. start on command line: > open index.html (opens the overview in your browser) in the same manner:

- cd run/geometries/FCC-eh/FCCeh_Option1/results/ ; open index.html
- cd run/geometries/FCC/FCChh_Option4/results/ ; open index.html

The program package (tklayout-lite) creating those distributions is easily installed:

- the tklayout (lite) stuff you access via:
  git clone -b masterLite https://github.com/tkLayout/tkLayout.git "src"
- Getting the results and creating the web-pages by starting (in run):
  tklayout -n1000 -N1000 -r geometries/FCC-eh/FCCeh_Option0/FCCeh_Option0.cfg
  (where FCCeh_Option0.cfg is the steering/configuration file)
- or
  tklayout -n1000 -N1000 -r geometries/FCC-eh/FCCeh_Option1/FCCeh_Option1.cfg
  or
  tklayout -n1000 -N1000 -m geometries/FCC/FCChh_Option4/FCChh_Option4.cfg

  for the 3 options considered.