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## **AFTER@LHC: A fixed-target programme at the LHC for heavy-ion, hadron, spin and astroparticle physics**

*Thursday, 30 June 2016 12:00 (20 minutes)*

In this talk, we will review a number of recent ideas\* put forward in favour of a fixed-target programme at the LHC - AFTER@LHC. By extracting the beam with a bent crystal or by using an internal gas target, the multi-TeV LHC beams allow one to perform the most energetic fixed-target experiments ever and to study with high precision pp, pd and pA collisions at  $\sqrt{s_{NN}} = 115$  GeV and Pbp and PbA collisions at  $\sqrt{s_{NN}} = 72$  GeV. A broad programme, covering large-x frontier for particle and astroparticle physics, spin and heavy-ion physics will greatly complement collider experiments, in particular those of RHIC and the EIC project.

We will focus on feasibility studies with first simulations of quarkonium, Drell-Yan production in pp, pA and AA collisions and Drell-Yan single-spin-asymmetries in pp collisions using a transversely polarised target. Drell-Yan and quarkonium production can be studied in different systems in a wide rapidity range providing important information concerning quark and gluon (n)pdf at large x, cold nuclear matter effects, quarkonium formation time in the medium, expected sequential suppression in QGP and final state interaction effects.

\*: for a complete list of references see

[http://after.in2p3.fr/after/index.php/Recent\\_published\\_ideas\\_in\\_favour\\_of\\_AFTER@LHC](http://after.in2p3.fr/after/index.php/Recent_published_ideas_in_favour_of_AFTER@LHC)

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