Contribution ID: **9** Type: **not specified**

Towards a full Run 2 W mass measurement at LHCb (30' talk + 30' discussion)

Monday 17 April 2023 14:00 (1 hour)

With the analysis of 2016 data provided by the LHC, the LHCb Collaboration demonstrated its capability in a measurement of the W boson mass. By including data collected in 2017 and 2018, the statistical precision will be improved by roughly a factor of two. Many efforts are being put in-place in order to reduce both the experimental and theoretical systematic uncertainties via a more detailed study of the detector effects and the modelling of the W boson production at the LHC.

The LHCb Collaboration is currently analyzing all the data collected in the Run 2 (2016-2018) of the LHC following a more careful treatment of the curvature biases and detector efficiencies, as well as exploring the most recent developments in the event generators and parton distribution functions (PDFs). The measurement of the W mass at LHCb is particularly interesting due to the anti-correlation of the PDF uncertainties with respect to ATLAS and CMS, since it provides a complementary coverage in pseudorapidity.

A combination of all the measurements at the LHC will allow to achieve a sensitivity closer to the global EW fit, and help to clarify the picture around the W boson mass after the most recent results.

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