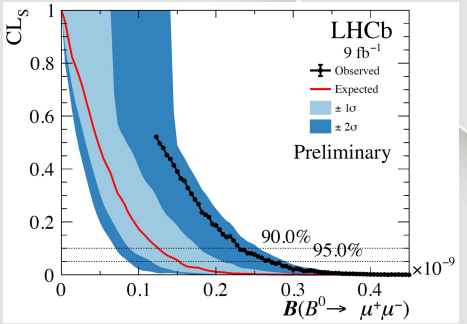
Public results in flavour physics

Nazila Mahmoudi

Results are published in different forms:

Upper limits (CL_s, Feldman-Cousins,...)

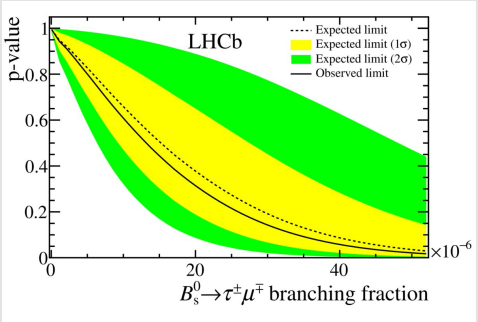
Publication of only an upper limit is not enough for reinterpretation



Talk by Santimaria (LHCb), March 2021

More and more the **full p-value scans** are also published

- plots are available in digital format
- calculate the χ^2
- translate to log-likelihood via Wilks theorem



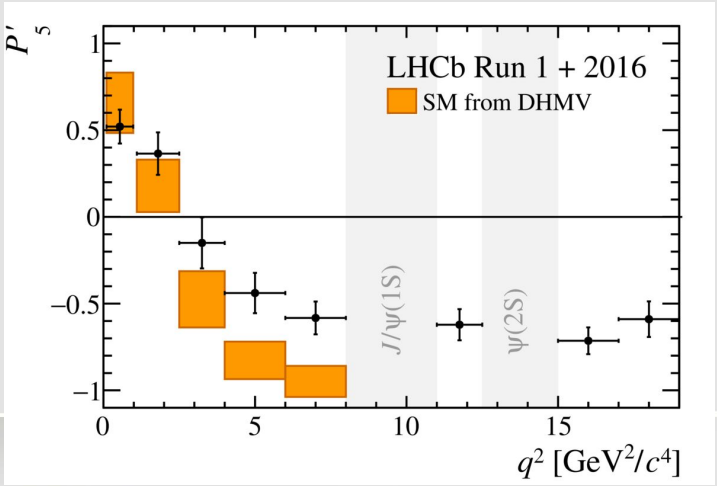
LHCb, arXiv:1905.06614

Measurements with symmetric or asymmetric errors

- Single measurements: calculate the χ^2 and the log-likelihood
- Important: not to symmetrise the errors!
- More and more multiple measurements of correlated quantities

-> correlation matrices are usually provided

-> very important for reinterpretation



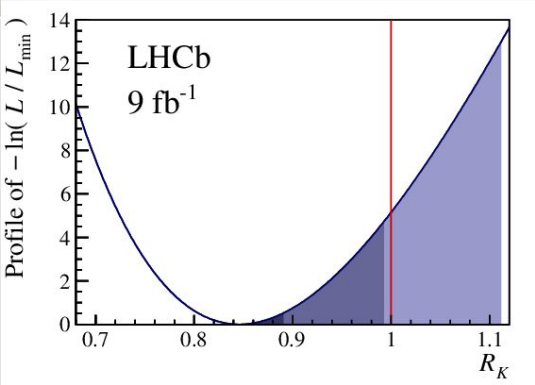
LHCb, arXiv:2003.04831

Likelihood functions

Advantage: Completeness

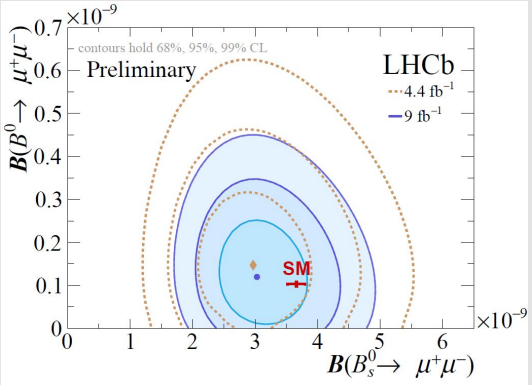
The likelihood curve contains all the information on the non-Gaussian effects and includes the systematic uncertainties

- One dimensional log-likelihood function



LHCb, 2103.11769

- Two dimensional log-likelihood function



Talk by Petridis (LHCb), March 2021

Risk (often stated)**:** Misinterpretation or misuse of data by theorists

- providing less information increases the risk of misinterpretation!
  - Errors get symmetrised
  - Correlations neglected
  - Interpolation of results,...
- Important to encourage systematic publication of likelihood functions
- In flavour physics, this is sometimes not enough

  LHCb provides also efficiency corrected, background subtracted data
  -> very useful to try other parameterizations, modeling,...
  -> Also useful for experimentalists
- See talk of P. Owen at the last (Re)interpreting workshop for a few concrete examples
- Public software: HEPLike by J. Bhom and M. Chrzaszcs