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HEPDATA as seen from LHCb

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Experience

Alex Grecu from LHCb has so far been the contact point for entering and verifying cross section data that is entered

Experience has been good but it is quite time consuming

Could be improved by enforcing the standardisation of output format within the collaboration

System of first encoding and then approving the data suits us well

Ability to include figures is interesting

But system for adding them too cumbersome

Some worry about unnecessary duplication of information between CDS/HEPDATA/Inspire

Beyond cross sections

There can be a need for theorists to access data well beyond just cross sections

- Dalitz plots

- Fit results

- Full likelihood “expressions”

Unclear if HEPDATA is the place to store this data

- At the moment attached to CDS record of LHCb papers

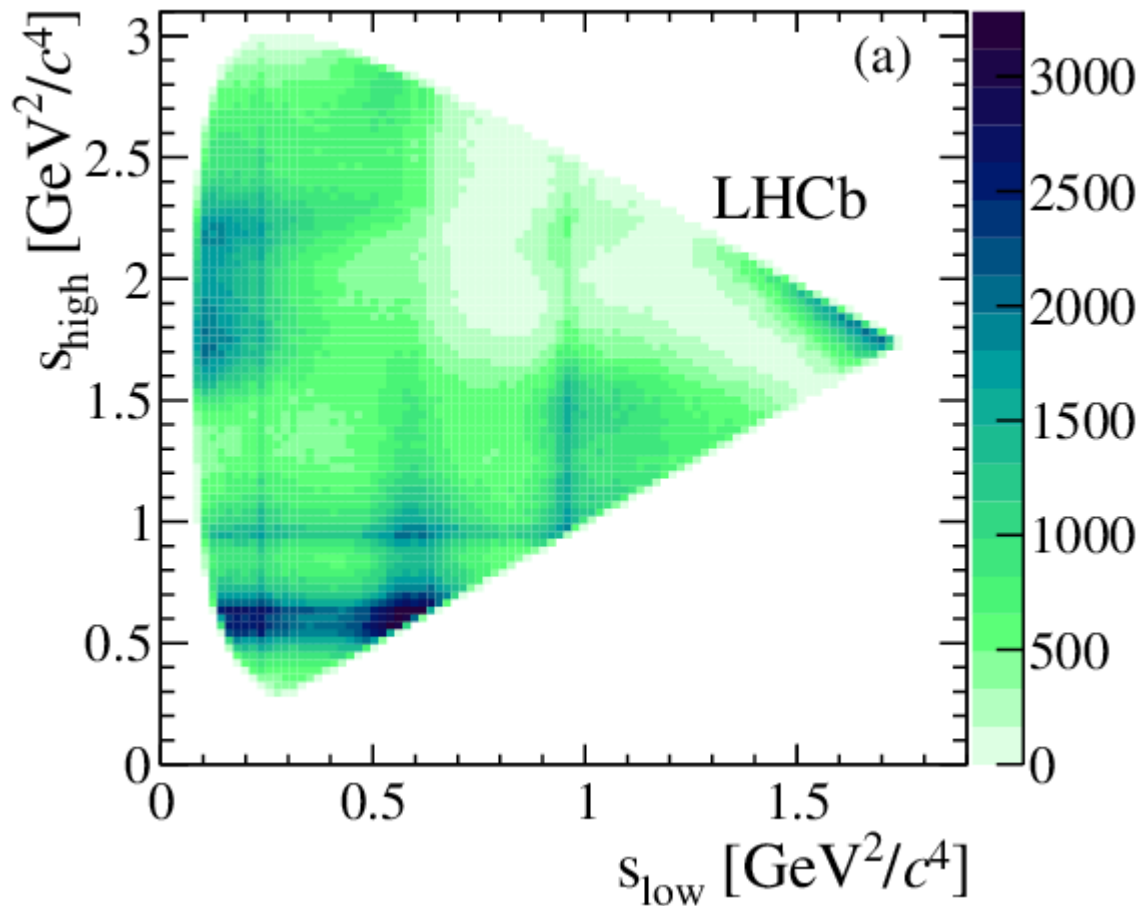
 - Difficult to find

 - Format not standardised at all

Examples of these ideas will follow

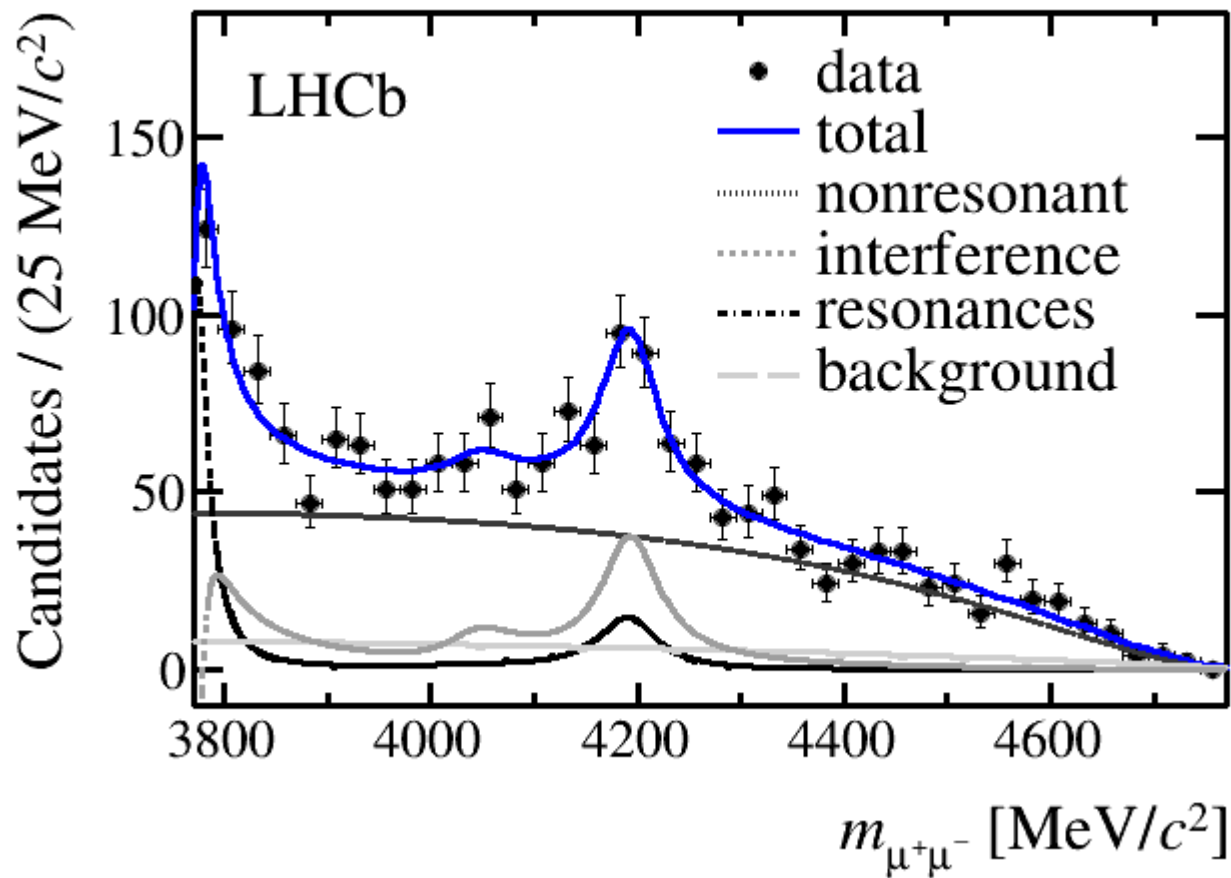
Dalitz plots

Store the content of each bin and associated uncertainties



Fit results

Example from fit of a resonance structure in $B^+ \rightarrow K\mu\mu$ decays, Phys. Rev. Lett. 111, 112003 (2013).



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The full shape with background subtracted is of interest
At the moment just attached as data file to CDS record

```
#dBF/dm data points for B+ -> K+mumu low recoil data  
# obtained from Phys. Rev. Lett. 111, 112003 (2013)  
#Mass ranges are in MeV/c2
```

#Mass range	dBF/dm	error
3770-3795	3.15e-07	2.87e-08
3795-3820	2.31e-07	2.47e-08
3820-3845	1.93e-07	2.2e-08
3845-3870	1.54e-07	1.97e-08
3870-3895	1.07e-07	1.63e-08

Full likelihood expression

A decay like $B \rightarrow K\pi\mu\mu$ is described by 8 amplitudes that each are functions of the dimuon invariant mass

In total 48 parameters are used to describe this

Theorists wants to use the full information in global fits for New Physics

The central values and the 48x48 correlation matrix is not sufficient as likelihood surface is not very Gaussian

Would really like to be able to transfer full likelihood information to theorists with “internal” marginalisation over experimental nuisance parameters