# Table of Contents

LHCb plots for 2015 data.........................................................................................................................1
- Dimuon plots...........................................................................................................................................1
- Pb-Pb plots (approved 23 May 2016)......................................................................................................1
  - General plots to define event activity classes....................................................................................1
- J/ in event activity classes......................................................................................................................1
  - D0 in event activity classes..................................................................................................................2
  - K0s in event activity classes.................................................................................................................2
    - in event activity classes.....................................................................................................................2
- J/ in ultraperipheral Pb-Pb collisions.....................................................................................................3
- Event display......................................................................................................................................4
SMOG plots, pNe collisions (approved 23 May 2016).............................................................................4
- J/.......................................................................................................................................................4
- D0.....................................................................................................................................................5
Questions received during talks regarding the publicity plots.............................................................5
LHCb plots for 2015 data

Dimuon plots

The approved dimuon (23/5) plot is superseded by those of CONF 2016-005.

See also LHCbPublicityPlotsCONF.

Pb-Pb plots (approved 23 May 2016)

General plots to define event activity classes

<table>
<thead>
<tr>
<th>Plot Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecal energy distribution in Pb-Pb collisions divided into event-activity classes. The highest event activity class is the 0-10%. This class corresponds also to most central collisions.</td>
<td></td>
</tr>
<tr>
<td>Distribution of the number of clusters in the VELO in Pb-Pb collisions. The distribution is also divided into event activity classes of Ecal energy. The highest event-activity class corresponds to events with the highest number of VeloClusters.</td>
<td></td>
</tr>
<tr>
<td>Correlation between the energy in the Ecal and the number of VeloClusters in Pb-Pb collisions.</td>
<td></td>
</tr>
</tbody>
</table>

J/ψ in event activity classes

<table>
<thead>
<tr>
<th>Plot Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHCb preliminary $\sqrt{s_{NN}} = 5$ TeV</td>
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<tr>
<td>LHCb preliminary $\sqrt{s_{NN}} = 5$ TeV</td>
</tr>
</tbody>
</table>
Invariant mass distribution of J/ψ candidates in the event-activity class 70-90%

Invariant mass distribution of J/ψ candidates in the event-activity class 50-70%

D0 in event activity classes

<table>
<thead>
<tr>
<th>Plot Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invariant mass distribution of D0 candidates in the event-activity class 50-70%</td>
<td></td>
</tr>
<tr>
<td>Invariant mass distribution of D0 candidates in the event-activity class 70-90%</td>
<td></td>
</tr>
</tbody>
</table>

K0s in event activity classes

<table>
<thead>
<tr>
<th>Plot Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invariant mass distribution of K0s candidates in the event-activity class 50-70%</td>
<td></td>
</tr>
<tr>
<td>Invariant mass distribution of K0s candidates in the event-activity class 70-90%</td>
<td></td>
</tr>
</tbody>
</table>
Invariant mass distribution of K^0_s candidates in the event-activity class 70-90%

Invariant mass distribution of K^0_s candidates in the event-activity class 50-70%

in event activity classes

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><img src="image1.png" alt="Plot" /></td>
<td>Invariant mass distribution of candidates in the event-activity class 70-90%</td>
</tr>
<tr>
<td><img src="image2.png" alt="Plot" /></td>
<td>Invariant mass distribution of candidates in the event-activity class 50-70%</td>
</tr>
</tbody>
</table>

J/ψ in ultraperipheral Pb-Pb collisions

<table>
<thead>
<tr>
<th>Plot</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3.png" alt="Plot" /></td>
<td>Invariant mass distribution of candidates in the event-activity class 70-90%</td>
</tr>
<tr>
<td><img src="image4.png" alt="Plot" /></td>
<td>Invariant mass distribution of candidates in the event-activity class 50-70%</td>
</tr>
</tbody>
</table>
Invariant mass distribution of J/ψ candidates in events containing only two long tracks and only two VeloTracks. No Downstream tracks, no Upstream tracks and no TT tracks are present. Number of hits in the SPD is also less than 20.

pT2 distribution of the dimuon candidates, in the invariant mass range 3050 < M < 3150 MeV/c², in events containing only two long tracks and only two VeloTracks. No Downstream tracks, no Upstream tracks and no TT tracks are present. Number of hits in the SPD is also less than 20.

Event display

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><img src="image" alt="Pb-Pb event display with J/ψ candidate" /></td>
<td>Pb-Pb event display with J/ψ candidate</td>
</tr>
<tr>
<td><img src="image" alt="Pb-Pb event display with large number of reconstructed tracks (1130) and with a J/ψ candidate" /></td>
<td>Pb-Pb event display with large number of reconstructed tracks (1130) and with a J/ψ candidate</td>
</tr>
</tbody>
</table>

* Link to the internal note on cds: LHCb-INT-2016-025

SMOG plots, pNe collisions (approved 23 May 2016)

J/ψ in ultraperipheral Pb-Pb collisions
Questions received during talks regarding the publicity plots

Question about track reconstruction in Pb-Pb: are the limitations hardware or software?

We are using so far the standard pp reconstruction and tracking, i.e. our software is not yet optimised for extremely high occupancies. We plan to have in the future dedicated tracking algorithms and reconstruction optimised for high occupancy events as PbPb and pPb/SMOG.

-- SilviaBorghi - 2016-05-23