# Effects of Spill-Over on the L0 Trigger Performance

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- Comparative studies with samples of minimum bias and $B_d \longrightarrow \pi\pi$ events

  $\surd$ for Brunel v13r1 together with

  $\surd$ Database v248r4

# Comparison of L0 Rates

**Rates for Minimum Bias Events**

| | Brunel v13r1 with Spill-over | Brunel v13r1 NO Spill-over |
|---|---|---|
| $\sum E_T$ veto[1] | 47.4 | 48.7 |
| Pile-up veto[1] | 15.9 | 15.0 |
| L0-accept for Pile-up vetoed events[2] | 17.7 | 16.5 |
| % events accepted by pile-up veto and $\sum E_T$ cut | 36.7 | 36.3 |

| | | |
|---|---|---|
| L0 total accept rate | 4.5 | 4.1 |
| L0 "single" accept rate[3] | 12.3 | 11.3 |

(1) $\sum E_T$ / Pile-up veto : % events rejected by $\sum E_T$ cut / Pile-up veto

(2) % of the events "pile-up vetoed" that otherwise would pass L0

(3) % events classified as single interaction by pile-up veto, that pass L0

# Comparison of L0 Rates (II)

**NOTE: no offline selection applied !**

| Rates for $B_d \to \pi\pi$ Events | | |
|---|---|---|
| | Brunel v13r1 with Spill-over | Brunel v13r1 NO Spill-over |
| $\sum E_T$ veto | 1.1 | 1.1 |
| L0-accept for $\sum E_T$ vetoed events | 5.0 | 6.7 |
| Pile-up veto | 39.1 | 37.6 |
| L0-accept for Pile-up vetoed events | 47.9 | 46.9 |
| % events accepted by pile-up veto and $\sum E_T$ cut | 59.8 | 61.3 |
| | | |
| L0 total accept rate | 27.0 | 27.9 |
| L0 "single" accept rate | 45.2 | 45.5 |

- **The effects on the performance of the L0 trigger due to the presence of spill-over are not significant !**
  (Note: the sample without spill-over has less statistics)