Reconstructed Luminosity

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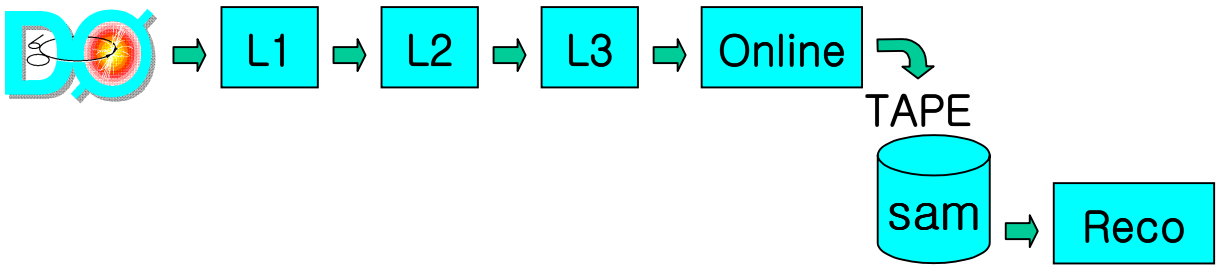
Reconstreted Luminosity



Recorded **L** = L1 **L** * (Stored / Fired)

Stored = L1 Recorded (mb) + L1 Recorded (zb)
Fired = L1 Accepted (mb) + L1 Accepted (zb)

lm_access package

made by A. KUPCO

- tool for accessing luminosity information in D0 data
- provides integrated luminosity(L1 trigger level) at good luminosity blocks.
- need 3 information files to obtain L1 luminosity
  . LBN list correspond to data file (LBN_list.txt)
  . L1L3TirgMap file (L1L3TrigMap.txt)
  . L1 luminosity per trigger and LBN (files at stage1b)

LBN list correspond to data file (LBN_list.txt)

recoA_reco_all_0000130386_mrg_001-001.raw_p10.07.01.root root 2523 2523 2523 < 130386 : 533576 - 533577 >
recoA_reco_all_0000130386_mrg_003-005.raw_p10.07.01.root root 7401 7401 7401 < 130386 : 533580 - 533590 >
recoA_reco_all_0000130386_mrg_007-007.raw_p10.07.01.root root 2716 2716 2716 < 130386 : 533593 - 533594 >
recoA_reco_all_0000130386_mrg_012-012.raw_p10.07.01.root root 2160 2160 2160 < 130386 : 533609 - 533612 >
recoA_reco_all_0000130386_mrg_014-014.raw_p10.07.01.root root 2815 2815 2815 < 130386 : 533615 - 533616 >
recoA_reco_all_0000130386_mrg_016-016.raw_p10.07.01.root root 2847 2847 2847 < 130386 : 533619 - 533620 >
recoA_reco_all_0000130386_mrg_018-019.raw_p10.07.01.root root 5369 5369 5369 < 130386 : 533625 - 533628 >
recoA_reco_all_0000130386_mrg_021-022.raw_p10.07.01.root root 3888 3888 3888 < 130386 : 533631 - 533635 >
recoA_reco_all_0000130386_mrg_024-024.raw_p10.07.01.root root 2209 2209 2209 < 130386 : 533638 - 533639 >
recoA_reco_all_0000130386_mrg_028-028.raw_p10.07.01.root root 2631 2631 2631 < 130386 : 533651 - 533652 >
recoA_reco_all_0000130386_mrg_030-030.raw_p10.07.01.root root 2292 2292 2292 < 130386 : 533655 - 533656 >
recoA_reco_all_0000130386_mrg_032-032.raw_p10.07.01.root root 2495 2495 2495 < 130386 : 533659 - 533661 >
recoA_reco_all_0000130386_mrg_034-034.raw_p10.07.01.root root 2860 2860 2860 < 130386 : 533664 - 533665 >
recoA_reco_all_0000130386_mrg_036-036.raw_p10.07.01.root root 1998 1998 1998 < 130386 : 533668 - 533669 >
recoA_reco_all_0000130386_mrg_038-038.raw_p10.07.01.root root 2695 2695 2695 < 130386 : 533672 - 533673 >
recoA_reco_all_0000130386_mrg_043-043.raw_p10.07.01.root root 2320 2320 2320 < 130386 : 533683 - 533684 >
recoA_reco_all_0000130386_mrg_046-049.raw_p10.07.01.root root 9514 9514 9514 < 130386 : 533689 - 533695 130386 : 533697 - 533701 >
recoA_reco_all_0000130386_mrg_051-052.raw_p10.07.01.root root 4796 4796 4796 < 130386 : 533704 - 533709 >
recoA_reco_all_0000130386_mrg_054-054.raw_p10.07.01.root root 2229 2229 2229 < 130386 : 533715 - 533716 >

File name : root (type of file, also could be raw or reco) : number of events (raw data, reco, root tuple)
<Run number : range of LBN>

L1L3TirgMap file (L1L3TrigMap.txt)

...

130384 min_bias 0 0 zero_bias 1 1 CEM5 2 2 CEM5eta8phi3 3 3 CEM12 4 4 CEM20 5 5 CJT5 6 6 CJT10eta8phi3 7 7 CJT10 8 8 CJT40 9 9 mu1cmsc_fz 10 10 mu1pix_fz 11 11 mu1cmsc_j5_fz 12 12 mu1cmsc_j10_fz 13 13 mu1cmsc_j10m_fz 14 14 mu2pix_fz 15 15 2CEM5 16 16 L1Zee 17 17 #

130385 min_bias 0 0 zero_bias 1 1 CEM5 2 2 CEM5eta8phi3 3 3 CEM12 4 4 CEM20 5 5 CJT5 6 6 CJT10eta8phi3 7 7 CJT10 8 8 CJT40 9 9 mu1cmsc_fz 10 10 mu1pix_fz 11 11 mu1cmsc_j5_fz 12 12 mu1cmsc_j10_fz 13 13 mu1cmsc_j10m_fz 14 14 mu2pix_fz 15 15 2CEM5 16 16 L1Zee 17 17 #

130386 min_bias 0 0 zero_bias 1 1 CEM5 2 2 CEM5eta8phi3 3 3 CEM12 4 4 CEM20 5 5 CJT5 6 6 CJT10eta8phi3 7 7 CJT10 8 8 CJT40 9 9 mu1cmsc_fz 10 10 mu1pix_fz 11 11 mu1cmsc_j5_fz 12 12 mu1cmsc_j10_fz 13 13 mu1cmsc_j10m_fz 14 14 mu2pix_fz 15 15 2CEM5 16 16 L1Zee 17 17 #

130406 none 19 18 #

130408 none 19 18 #

130409 min_bias 0 0 zero_bias 1 1 CEM5 2 2 CEM5eta8phi3 3 3 CEM12 4 4 CEM20 5 5 CJT5 6 6 CJT10eta8phi3 7 7 CJT10 8 8 CJT40 9 9 mu1cmsc_fz 10 10 mu1pix_fz 11 11 mu1cmsc_j5_fz 12 12 mu1cmsc_j10_fz 13 13 mu1cmsc_j10m_fz 14 14 mu2pix_fz 15 15 2CEM5 16 16 L1Zee 17 17 #

130413 l3calcalib 1 1 #

130416 l3calcalib 1 1 #

...

- The map between L3 trigger names and L1 and L3 trigger bit numbers

L1 luminosity per trigger and LBN (files at stage1b)

/prj_root/829/c/com/begel/stage1b/53/**533577**

::::::::::::::

0	1.15e-03
1	9.12e-06
2	2.18e+00
3	1.91e+01
4	7.64e+01
5	1.53e+02
6	1.53e+00
7	1.53e+02
8	3.05e+01
9	1.53e+02
10	7.64e+00
11	1.53e+01
12	1.53e+02
13	1.53e+02
14	1.53e+02
15	1.53e+02
16	3.82e+01
17	1.53e+02

/prj_root/829/c/com/begel/stage1b/53/533578

::::::::::::::

0	1.17e-03
1	9.14e-06
2	2.23e+00
3	1.95e+01
4	7.80e+01
5	1.56e+02
6	1.56e+00
7	1.56e+02
8	3.12e+01
9	1.56e+02
10	7.80e+00
11	1.56e+01
12	1.56e+02
13	1.56e+02
14	1.56e+02
15	1.56e+02
16	3.90e+01
17	1.56e+02

/prj_root/829/c/com/begel/stage1b/53/**533580**

::::::::::::::

0	1.20e-03
1	9.15e-06
2	2.27e+00
3	1.99e+01
4	7.95e+01
5	1.59e+02
6	1.59e+00
7	1.59e+02
8	3.18e+01
9	1.59e+02
10	7.95e+00
11	1.59e+01
12	1.59e+02
13	1.59e+02
14	1.59e+02
15	1.59e+02
16	3.97e+01
17	1.59e+02

•Each LBN files, L1 trigger bit number and corresponding L1 luminosity per LBN

How to using lm_access at d0mino

```
>setup  n32
>setup D0RunII p10.13.00        (* or other release version you want )
>setup d0cvs
>newrel –t p10.13.00 p1013      (* make working directory (p1013)  )
>cd p1013
>addpkg –h lm_access            (* get lm_access package from cvs server )
>gmake lib                      (* compile and make library liblm_access.a)
```

And next, run your program after make your own code or modify example code.

For example,

```
>gmake ex_xsec1                 (* compile example code)
>./ex_xsec1 recoA_reco_all_0000133014_mrg_001-006.raw_p10.07.01.root  recoA_reco_all
  _0000133020_mrg_013-015.raw_p10.07.01.root
```

* Detailed instruction at Luminosity ID page

http://www-d0.fnal.gov/phys_id/luminosity/data_access/lm_access/doc

Results of Run 130386 by using lm_access

```
-----------------------------------------------------------------------------------------------------------------
DATA={'LBN': 533577, 'min_bias': 51, 'zero_bias': 6, 0: 51, 1: 6, 'FILE': recoA_reco_all_0000130386_mrg_001-001.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533580, 'min_bias': 20, 'zero_bias': 2, 0: 20, 1: 2, 'FILE': recoA_reco_all_0000130386_mrg_003-005.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533583, 'min_bias': 1, 'zero_bias': 0, 0: 1, 0: 0, 'FILE': recoA_reco_all_0000130386_mrg_003-005.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533587, 'min_bias': 43, 'zero_bias': 7, 0: 43, 1: 7, 'FILE': recoA_reco_all_0000130386_mrg_003-005.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533590, 'min_bias': 67, 'zero_bias': 6, 0: 67, 1: 6, 'FILE': recoA_reco_all_0000130386_mrg_003-005.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533593, 'min_bias': 47, 'zero_bias': 7, 0: 47, 1: 7, 'FILE': recoA_reco_all_0000130386_mrg_007-007.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533594, 'min_bias': 52, 'zero_bias': 5, 0: 52, 1: 5, 'FILE': recoA_reco_all_0000130386_mrg_007-007.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533609, 'min_bias': 41, 'zero_bias': 5, 0: 41, 1: 5, 'FILE': recoA_reco_all_0000130386_mrg_012-012.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533615, 'min_bias': 59, 'zero_bias': 7, 0: 59, 1: 7, 'FILE': recoA_reco_all_0000130386_mrg_014-014.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533616, 'min_bias': 50, 'zero_bias': 5, 0: 50, 1: 5, 'FILE': recoA_reco_all_0000130386_mrg_014-014.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533619, 'min_bias': 53, 'zero_bias': 7, 0: 53, 1: 7, 'FILE': recoA_reco_all_0000130386_mrg_016-016.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533620, 'min_bias': 40, 'zero_bias': 4, 0: 40, 1: 4, 'FILE': recoA_reco_all_0000130386_mrg_016-016.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533625, 'min_bias': 51, 'zero_bias': 7, 0: 51, 1: 7, 'FILE': recoA_reco_all_0000130386_mrg_018-019.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533626, 'min_bias': 75, 'zero_bias': 6, 0: 75, 1: 6, 'FILE': recoA_reco_all_0000130386_mrg_018-019.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533627, 'min_bias': 43, 'zero_bias': 5, 0: 43, 1: 5, 'FILE': recoA_reco_all_0000130386_mrg_018-019.raw_p10.07.01.root, 'VERSION': p10.07.01}
DATA={'LBN': 533628, 'min_bias': 42, 'zero_bias': 7, 0: 42, 1: 7, 'FILE': recoA_reco_all_0000130386_mrg_018-019.raw_p10.07.01.root, 'VERSION': p10.07.01}
...
-----------------------------------------------------------------------------------------------------------------
```

- The root-tuple data at d0mino:/sam/cache* directory

Current Status

- Finish to make result for all p10.07.01 root-tuple samples recently (LBN range: 511149 – 597051)

- But it shows the different result from Marco's one. We are trying to understand and fix it.

- Ready for all p10.11.00 samples