Luminosity Tools

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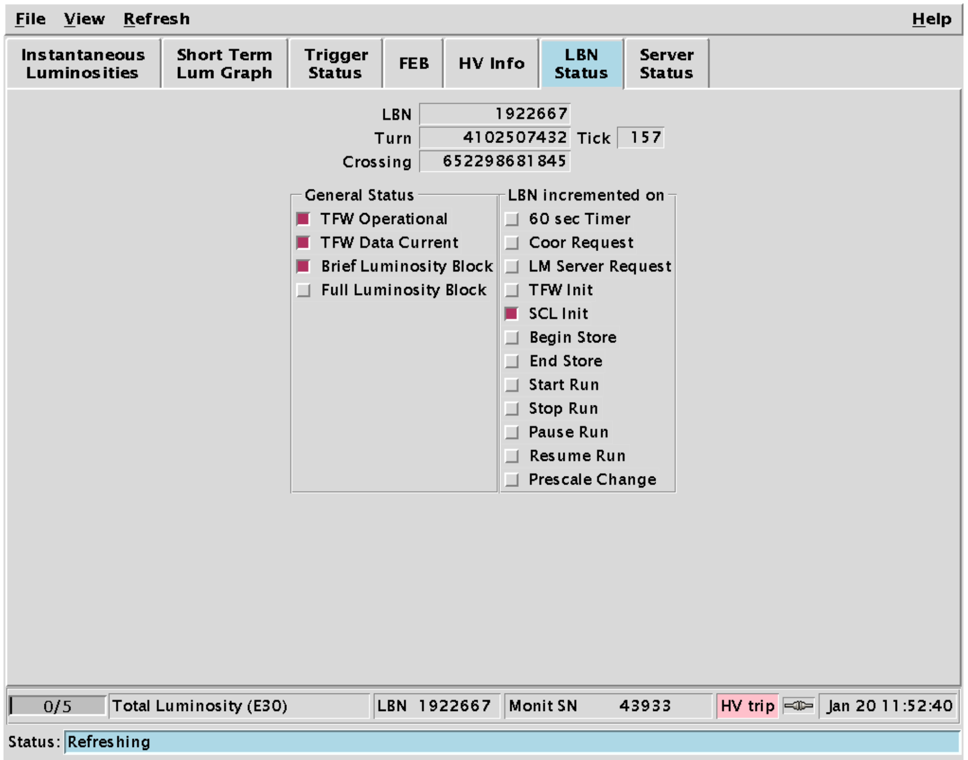
Outline

- Real Time Monitoring
- Reports
- Offline Access

$\mathcal{L}$DAQ Monitoring GUIs

- $\mathcal{L}$DAQ has an internal monitoring system. lmMonitor receives data and status messages from every $\mathcal{L}$DAQ application. Data are collated and passed to various client processes.
- Several GUI variants run in the Control Room.
  - lmExpert for Luminosity experts
  - lmCaptain for Shift Captains
  - lmShifter for DAQ shifters
  - lmTrigger for Global Monitor shifters
  - lmFPD for FPD shifters
- Uses the standard D0Gui package.



Reports

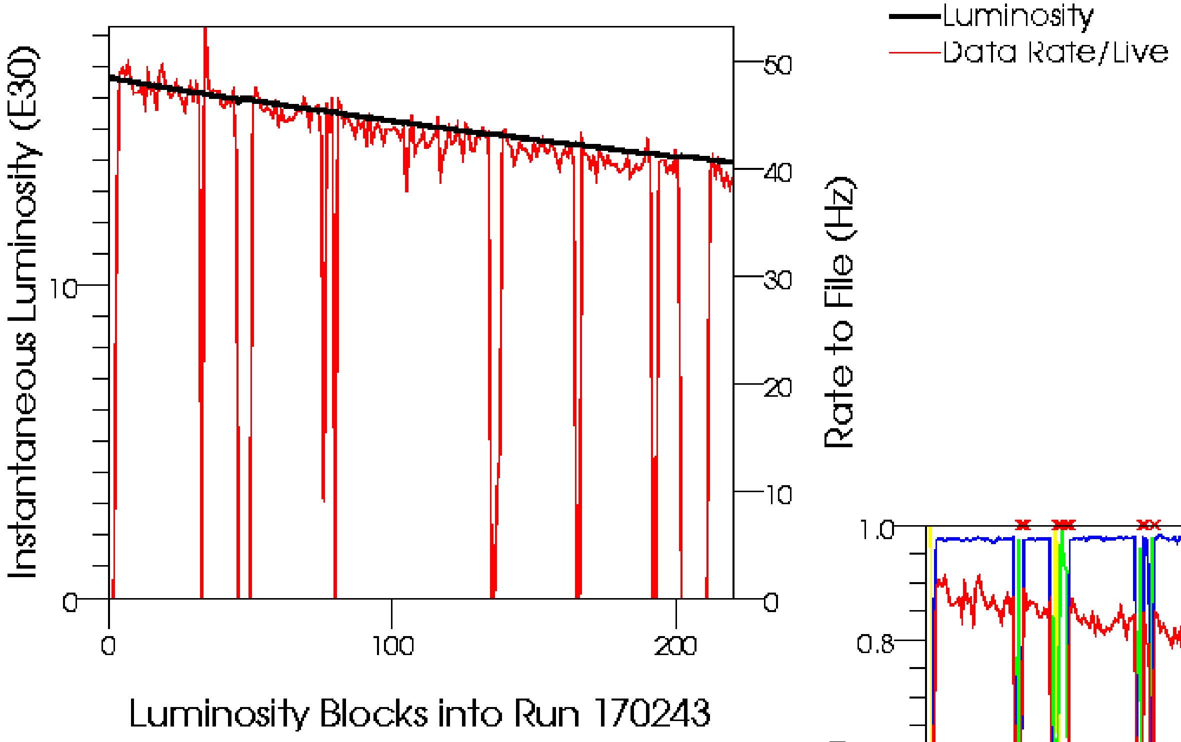
- Many reports are produced as a by-product of our efforts.
- Operations Reports (Run, Daily, Weekly, Monthly):
  http://www-d0online.fnal.gov:8511/www
- Reconstruction:
  http://www-d0.fnal.gov/phys_id/luminosity/data_access/processing_status

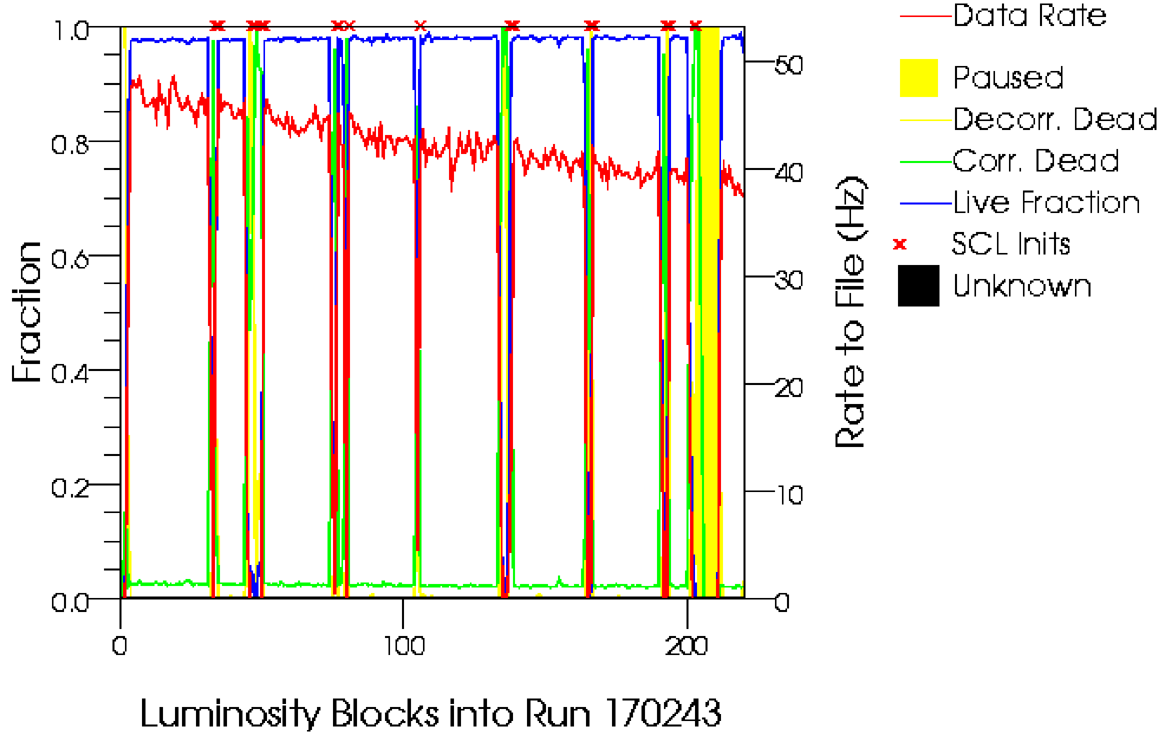
- Many examples are presented in talks throughout this workshop.

Year	Delivered (pb^{-1})	Recorded (pb^{-1})	Reconstructed (pb^{-1})	Events (millions)
2001	15.6	1.7	1.6	12.4
2002	136.7	81.0	74.8	235.0
2003	80.3	68.0	65.5	156.1
Run II	232.6	150.6	141.9	403.5

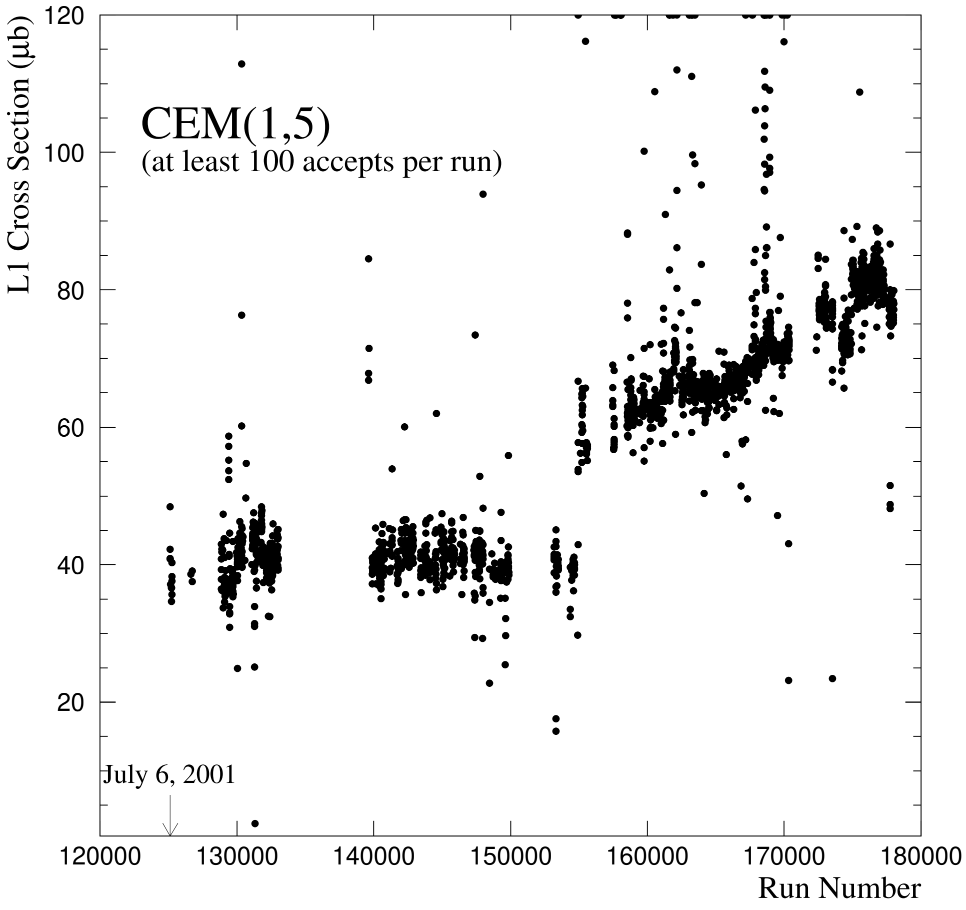
Operations Reports

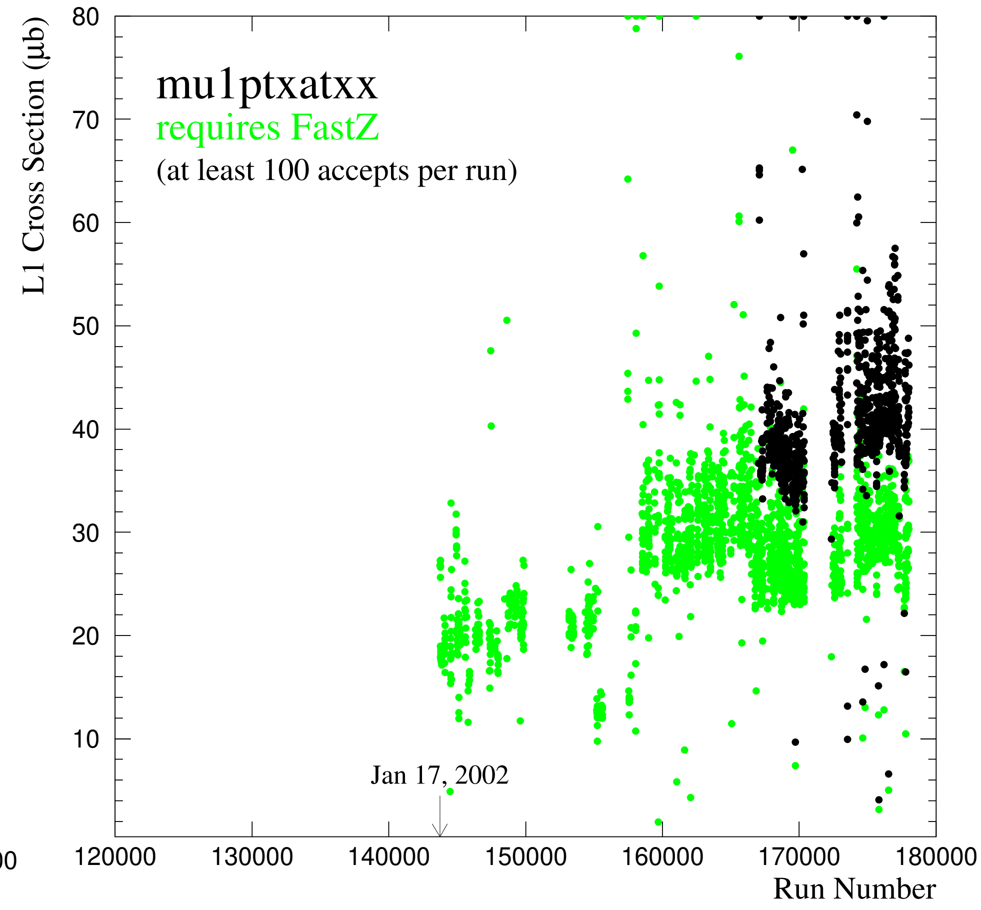
http://www-d0online.fnal.gov:8511/www





Trigger Cross Sections





Terry Toole has also been working on an application to view trigger cross sections as a function of run number. It should be ready soon.

MINTS

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

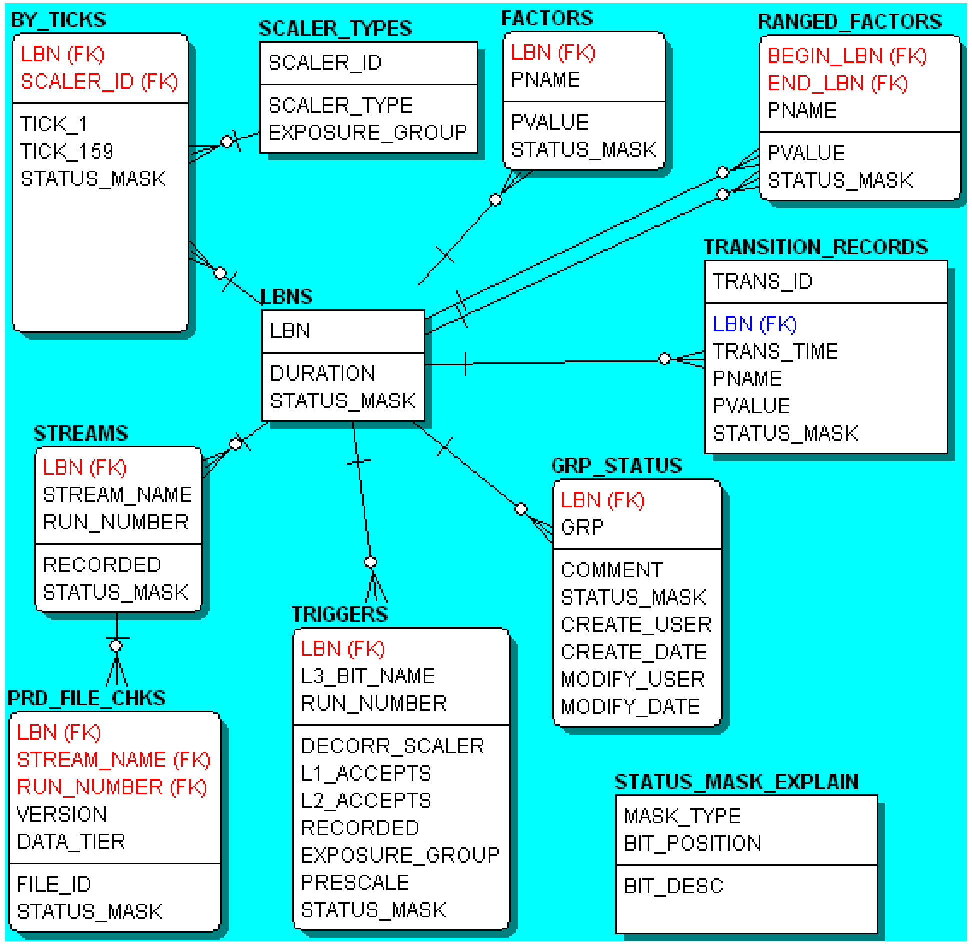
Summaries by trigger type

Trigger	Number of runs	First run	Date	Last run	Date	RAW data events	DST events	thumbnails or ROOT tuples	Last update
global_CMT_10.0	21	170247	09-JAN-03	170374	12-JAN-03	4713303	0	0	20-JAN-03
global_CMT_9.5	94	169524	19-DEC-02	170246	09-JAN-03	30435319	28761775	26877686	20-JAN-03
global_CMT_9.3	161	168028	13-NOV-02	169523	19-DEC-02	43102931	42433283	41211078	23-DEC-02
global_CMT_9.2	81	167019	30-OCT-02	168033	14-NOV-02	17030440	16781001	16798916	25-NOV-02
global_CMT_8.4	154	165635	04-OCT-02	167015	30-OCT-02	33125644	27370799	26593601	25-NOV-02
global_CMT_8.30	66	164380	19-SEP-02	165601	04-OCT-02	9828423	7291973	7287594	14-OCT-02
global_CMT_8.20	159	162458	22-AUG-02	164321	19-SEP-02	28920697	10790477	10780538	14-OCT-02
global_CMT_8.10	91	161101	02-AUG-02	162351	22-AUG-02	12440997	5116423	4683430	14-OCT-02
global_CMT_8.00	51	160582	26-JUL-02	161620	09-AUG-02	4716356	1596608	1586365	14-OCT-02
global_CalMuon_noL2MU_7.4	139	158535	30-JUN-02	160554	26-JUL-02	20468424	9453545	6669210	14-OCT-02
global_CalMuon_7.4	4	158465	29-JUN-02	158532	30-JUN-02	47171	17143	0	14-JUL-02
global_CalMuon_7.4	4	158465	29-JUN-02	158532	30-JUN-02	47171	17143	0	14-JUL-02
global_CalMuon_7.3	39	155465	30-MAY-02	158069	26-JUN-02	2164822	1286601	581550	14-JUL-02
global_CalMuon_7.2	57	154566	17-MAY-02	155605	01-JUN-02	4805742	4114810	4116481	14-JUL-02
global_CalMuon_7.1	1	154494	17-MAY-02	154494	17-MAY-02	166205	148509	148509	14-JUL-02
global_CalMuon_7.0	10	153792	09-MAY-02	153889	10-MAY-02	794319	785123	785123	14-JUL-02
global_CalMuon_5.1	59	153170	02-MAY-02	154492	17-MAY-02	8296224	8029867	7544547	14-JUL-02
global_CalMuon_5.0	214	149269	22-MAR-02	153340	04-MAY-02	17055751	16329462	15971621	14-JUL-02
global_CalMuon_4.2	120	147717	28-FEB-02	149275	22-MAR-02	8883102	8585888	8406000	14-JUL-02
global_CalMuon_4.1	44	146437	14-FEB-02	147722	28-FEB-02	2780340	2723439	2688154	14-JUL-02
global_CalMuon_4.0	52	145626	07-FEB-02	146582	18-FEB-02	8341676	8255266	8210745	14-JUL-02
global_CalMuon_3.4	4	143816	19-JAN-02	143876	20-JAN-02	80390	80390	80390	17-MAY-02
global_CalMuon_3.3	129	143729	17-JAN-02	145599	07-FEB-02	5130382	5023855	5022050	14-JUL-02
global_CalMuon_3.2	3	143722	17-JAN-02	143725	17-JAN-02	97005	97005	97005	17-MAY-02
global_CalMuon_3.1	115	142198	23-DEC-01	143482	14-JAN-02	3765628	3755115	3755115	17-MAY-02
global_CalMuon_3.0	36	141737	18-DEC-01	142145	22-DEC-01	443761	441728	441728	17-MAY-02
global_CalMuon_2.1	42	140695	09-DEC-01	141724	18-DEC-01	840467	840465	840465	17-MAY-02
global_CalMuon_2.0	101	139626	28-NOV-01	140686	09-DEC-01	1378325	1372741	1370580	17-MAY-02
global_CalMuon_1.5	26	132830	04-OCT-01	133020	06-OCT-01	686250	504656	499858	17-MAY-02
global_CalMuon_1.4	69	132320	27-SEP-01	132650	02-OCT-01	806493	622157	582001	17-MAY-02
global_CalMuon_1.3	46	131788	20-SEP-01	132170	26-SEP-01	1482242	1431442	1404509	17-MAY-02
global_CalMuon_1.2	36	131371	17-SEP-01	131781	20-SEP-01	456124	386785	379937	17-MAY-02
global_CalMuon_1.1	45	131101	14-SEP-01	131365	17-SEP-01	1057289	888066	866855	17-MAY-02
global_CalMuon_1.0	35	130448	06-SEP-01	131093	14-SEP-01	871949	688807	670504	17-MAY-02
cosmics	238	129285	26-AUG-01	160181	20-JUL-02	3813807	74438	74438	14-OCT-02
minimum_bias	17	139615	28-NOV-01	168727	02-DEC-02	737327	520427	520427	14-DEC-02
zero_bias	1702	129290	26-AUG-01	170699	19-JAN-03	8906281	260838	258570	20-JAN-03
others	357	129194	25-AUG-01	170323	10-JAN-03	11267001	6348699	5797559	20-JAN-03

This page was created by MINTS using the information in the SAM and Runs databases
MINTS updated this page on Mon Jan 20 2003 at 05:09:35

Data Access & Database

- Information collected by the $\mathcal{L}$DAQ is currently used for data quality assessment by several groups.
- A subset of the data is stored within flat files available offline.
- Much more information will be accessible when we migrate from the flat files to the Luminosity Database.
- The DB design exists and should be in use by the end of summer. We will back-fill the scaler data into the DB.



- We need people to build tools that use this information!

Offline Access

- A tool exists to access the luminosity from the offline analysis code. This package is called lm_access and has been available via CVS since October 2001. A wrapper for the framework exists.
- Keyed by LBN. Returns status and requested data:
  - Trigger Name $\longrightarrow$ integrated triggered or recorded luminosity
  - Trigger Name & `RECO` Version $\longrightarrow$ integrated reconstructed luminosity
  - Tick Number $\longrightarrow$ instantaneous delivered luminosity, proton halo rate, anti-proton halo rate, average number of interactions
- With additional help, it can be extended to provide:
  - `OR`ed trigger combinations (see DØ Note 4154)
  - Number of accepts at L1, L2, or L3 $\longrightarrow$ Trigger Cross Sections
  - Integrated delivered luminosity
  - Additional status flags (e.g., SCL init, transitions, fatal alarms)

Offline Access Details

- Luminosity can only be retrieved for good LBNs.
  You MUST exclude events from bad LBNs in your normalized analyses!
- Each LBN resides in a file on `d0mino` & `clued0`. Files are also propagated to several non-FNAL locations.
- Included in this package are tools for handling some offline bookkeeping tasks.
- More information on this tool may be found on the Luminosity ID web pages.