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How to download luminosity for runs **BEFORE** LS1

See users guide of lumiCalc2.py on CMS Twiki (lumiCalc2.py requires CMSSW + one extra module and provides only HF lumi)

Example

```
lumiCalc2.py -o fill_2836_lumiCalc2.py_V04-02-10_lumibylsXing.csv -f 2836 lumibylsXing --xingMinL
```

How to download luminosity and beam/bunch intensities for runs AFTER LS1

CMS doc to brilws (look at it before continuing):

<http://cms-service-lumi.web.cern.ch/cms-service-lumi/brilwsdoc.html>

brilws release notes: <http://cms-service-lumi.web.cern.ch/cms-service-lumi/releaserss.xml>

In short in the simplest case (look to the doc for more details, options and up to date comments):

1) login to lxplus:

```
ssh -Y <user>@lxplus.cern.ch
```

2) run (adjust to your real running setup accordingly, the following will uninstall current version of brilws and install the latest one)

```
export PATH=$HOME/.local/bin:/afs/cern.ch/cms/lumi/brilconda-1.0.3/bin:$PATH
pip uninstall -y brilws
pip install --install-option="--prefix=$HOME/.local" brilws
pip show brilws
```

Examples

- *lumi info*

for a given fill number may be downloaded as:

```
brilcalc lumi -f 4489 --xing -o fill_4489_brilcalc_lumi_xing.csv
```

which may provide only some BCIDs. To download some lumi values for all BCIDs you may try HF detector (dedicated to mainly online measurement):

```
brilcalc lumi -f 4489 --xing -o fill_4489_brilcalc_lumi_xing.csv --type hfoc
```

To select just some BCIDs (e.g., 41,1826,901,932):

```
lumi -f 4489 --xing --xingId "41,1826,901,932" --xingMin 1e-100 -o fill_4489_brilcalc_lumi_x
```

- *beam/bunch intensities*

may be downloaded as:

```
brilcalc beam -f 4489 --xing -o fill_4489_brilcalc_beam_xing.csv
```

Important note

The above instructions should help to get fast some lumi data. For more advanced analyses it is necessary to ask CMS which lumi should be used for given TOTEM runs and what is the corresponding uncertainty etc (some corrections or calibration may require some more time for offline analysis and may come much later). The downloaded file with lumi values includes in header also some meta information (data tag and norm tag - "version") which is very useful for later usage - to keep track of the version, lumi values serving as an input for an physics analysis (=>save and keep the file).

CMS lumi/bril mailing list: hn-cms-luminosity@cernNOSPAMPLEASE.ch

Some usefull links

CMS Luminosity - public results

https://twiki.cern.ch/twiki/bin/view/CMSPublic/LumiPublicResults#2015_Proton_Proton_Collisions

Simple lumi calculator: <https://lpc.web.cern.ch/lpc/lumi.html> [↗](#)

General information about luminosity calibration at the LHC (mostly outdated but contains links about concept of luminosity etc) <http://lpc.web.cern.ch/lpc/lumicalib.htm> [↗](#)

Terminology

BCID/BXID - bunch crossing ID (CMS starts from 1, TOTEM from 0 - check it)

SBIL - single bunch instantaneous luminosity

LS - lumi section or lumi block (~23.3sec)

Miscellaneous

TOTEM fills without stable beams: in 2015: 3838, 3844, 3952 (no lumi available), 4489

-- JiriProchazka - 2015-10-28

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