This page is obsolete, please go to
http://wikis.cern.ch/display/expcomm/DIP+LHC ⌐

Welcome to the Leade Twiki. LEADE is the working group for the LHC Experiment-Machine Data Exchange and the main purpose of this web is the description of the items to be exchanged. The minutes of LEADE are recorded in http://lhc-data-exchange.web.cern.ch/lhc-data-exchange/ ⌐ The functional specification is available in the EDMS document 701510 by E. Tsemelis. New requirements have been added since by LHC operations, listed in http://cern.ch/lhc-commissioning/systems/data-exchange/data-exchange.htm ⌐ .

Data exchanged between the LHC machine and experiments

Data exchange is via DIP (Data Interchange Protocol) as described in https://edms.cern.ch/file/457113/2/DIPDescription.doc ⌐. DIP is maintained by IT/CO http://itcofe.web.cern.ch/itcofe/Services/DIP/welcome.html ⌐. The following chapters describe the items to be exchanged, their location and estimated availability. Announcements of publication availability, new requirements, changes, etc. are announced through the **lhc-exp-coms@cern.ch** mailing list.

In the LHC machine environment all floating point data is typically produced as *double* (64-bit) and will be published as such. *During the conversion some loss of precision may occur*.

Machine to experiments

All publications from LHC are under dip/acc/LHC/ followed by the category of interest (Beam, RunControl, Safety, etc) and the publication items. The following tables depict the publication details. Additional information on some of the publications is available at http://ts-dep-lea-int.web.cern.ch/ts-dep-lea-int/dataexchange-DIP.htm ⌐

Available publications

Publications which are fully defined and currently published. They can still be subject to some small modifications.

Measurement	DIP item name/source data description
	Beam and machine observables
Total beam intensity	dip/acc/LHC/Beam/Intensity/* (Beam1 and 2)/http://bdidev1.cern.ch/bdisoft/development/BDI-Domains/bdeyelids/bdeyelids.php?currentSelection= ExperimentAcquisition property - Please note that there are two redundant beam intensity publications
Individual bunch intensities	dip/acc/LHC/Beam/IntensityPerBunch/* (Beam1 and 2)/* (A and B) BI documentation ⌐ ExperimentA bunch intensity publications and the one which is flagged as valid is published to DIP
Average 2D beam size	dip/acc/LHC/Beam/Size* (Beam1 and 2) http://bdidev1.cern.ch/bdisoft/development/BDI-Domains/bdeyelids/bdeyelids.php?currentSelection=C AcqToExperiments property
Luminosity cdte mean	dip/acc/LHC/Beam/LuminosityAverage/* http://bdidev1.cern.ch/bdisoft/development/BDI-Domains/bdeyelids/bdeyelids.php?currentSelection=C property
Luminosity cdte b-by-b	dip/acc/LHC/Beam/LuminosityPerBunch/* http://bdidev1.cern.ch/bdisoft/development/BDI-Domains/bdeyelids/bdeyelids.php?currentSelection=C property

Luminosity Gas mean	dip/acc/LHC/Beam/LuminosityAverage/* http://bdidev1.cern.ch/bdisoft/development/BDI-Domains/bdeyelids/bdeyelids.php?currentSelection=C Acquisition property
Luminosity Gas b-by-b	dip/acc/LHC/Beam/LuminosityPerBunch/* http://bdidev1.cern.ch/bdisoft/development/BDI-Domains/bdeyelids/bdeyelids.php?currentSelection=C Acquisition property
Abort Gap Beam Current	dip/acc/LHC/Beam/AbortGapIntensity/* http://bdidev1.cern.ch/bdisoft/development/BDI-Domains/bdeyelids/bdeyelids.php?currentSelection=C Acquisition property
Average Beam Loss	dip/acc/LHC/Beam/BLM/LSS* integrated beam losses 10us, 633ms, 1310ms from monitors 260m aro gets it from BLM monitors as described in http://bdidev1.cern.ch/bdisoft/development/BDI-Domains/bdeyelids/bdeyelids.php?currentSelection=C
Beam Loss thresholds	dip/acc/LHC/Beam/BLM/LSS*_thr Beam loss thresholds for 10us, 633ms, 1310ms for BLM monitors concentrator and are adjusted by operation
HOR & VER Positions	dip/acc/LHC/Beam/BPM Vertical and horizontal positions from selected BPMs. Includes BPM names of a BPM which name is at index i will be at index i. If more BPMs are added, they will be added at th is at the expected position. Value may be not correct if the corresponding error string is not empty. Dat it from closed orbit position measurement as descibed in http://bdidev1.cern.ch/bdisoft/development/BDI-Domains/bdeyelids/bdeyelids.php?currentSelection=C positions are given in micro-meter ('um') w.r.t. to the BPM center, which in usually about the same as t about 0.2-0.5 mm r.m.s. Note:positions from the 2 ATLAS Roman Pots are missing yet
Beam energy	dip/acc/LHC/Beam/Energy multiply by 120 to get MeV value
Collimator positions	dip/acc/LHC/Machine/CollimatorPositions/* 8 position values from the *MeasuredCornerPositions* pro https://edms.cern.ch/file/934341/0.1/LHC-TC-ES-0002-00-10.pdf Positions and gaps in mm, positio
TCDQ Collimator positions	dip/acc/LHC/Machine/TCDQPositions/* 2 position values from the *MeasuredCornerPositions* propert https://edms.cern.ch/file/934341/0.1/LHC-TC-ES-0002-00-10.pdf Positions in mm, relative to the co
TED Dump position	dip/acc/LHC/Machine/TEDPosition/* position from the *Status* property, position=2 means OUT (beam (unknown), 1(installation), 4 (transport), 5 (undefined position)
Injection lines intensity	dip/acc/LHC/Beam/IntensityInj/* (TI2.29125, TI8.87750) The size of totalIntensityHigh is alvays one example, the nominal LHC pilot (5E9 charges) would give "0.5". You have to check the value of cycle assigned by operation and can change with time.
Luminosity Scan	dip/acc/LHC/Beam/LuminosityScan

Item	DIP item name/source data description
	Run Control
Machine Mode	dip/acc/LHC/RunControl/MachineMode accelerator mode string defined by LHC operation https://edms.cern.ch/cedar/plsql/doc.info?cookie=8501908&document_id=865811&version=1.0&p_tab
Beam Mode	dip/acc/LHC/RunControl/BeamMode beam mode string defined by LHC operation https://edms.cern.ch/cedar/plsql/doc.info?cookie=8501908&document_id=865811&version=1.0&p_tab
Beam type	dip/acc/LHC/RunControl/BeamType/* (Beam1 and 2) beam type encoding defined by LHC operation http://wwwpsco.cern.ch/private/timing/timing/Seq/tgmLines.html?mode=OPER&net=LHC&mch=LHC

Safe beam flags	dip/acc/LHC/RunControl/SafeBeam/* (Beam1 and 2) flags encoding defined by LHC operation http://wwwpsco.cern.ch/private/timing/timing/Seq/tgmLines.html?mode=OPER&net=LHC&mch=LHC
Fill number	dip/acc/LHC/RunControl/FillNumber LHC fill number http://wwwpsco.cern.ch/private/timing/timing/Seq/tgmLines.html?mode=OPER&net=LHC&mch=LHC
Circulating Bunch Configuration	dip/acc/LHC/RunControl/CirculatingBunchConfig/* (Beam1 and 2) Circulating Bunch Configuration, beam. Contains an array which encodes mapping of circulating bunches to RF buckets i.e. the first elem contains the RF bucket number of the bunch 1 etc. If the value is 0 then there is no corresponding bunch
Injection Bunch Configuration	dip/acc/LHC/RunControl/InjectionBunchConfig/* (Beam1 and 2) Injection Bunch Configuration, per b Contains an array which encodes mapping of injected bunches to RF buckets i.e. the first element conta RF bucket number of the bunch 1 etc. If the value is 0 then there is no corresponding bunch. The 'ACTI field will be set to *true* for the injected beam and to *false* for the other beam.

Item	DIP item name/source data description	Publication contact	Data contact	Volum Byte
	Handshakes			
LHC handshake	dip/acc/LHC/Handshake/* Injection, Adjust and Beamdump handshakes from LHC operations, see http://cern.ch/lhc-commissioning/systems/data-exchange/data-exchange.htm	K. Kostro	AB/OP M. Lamont	string

Item	DIP item name/source data description	Publication contact	Data contact	Volume Bytes	Frequency
	Safety				
SPS probe beam flag	dip/acc/LHC/Safety/* (MaxSpsProbeBeamA and B) SPS Probe Beam Flag Threshold which gives the maximum beam intensity that can be injected into an empty LHC (probe beam). Value is in units of 1E8 charges.	K. Kostro	AB/OP J. Wenninger	1 integer	on change

Item	DIP item name/source data description	Publication contact	Data contact	Volume Bytes	Frequency
	Miscellaneous				
Post Mortem Timestamp	dip/acc/LHC/Timing/PostMortem Postmortem Event. Typically postmortem request is delivered as HW signal but this software event allows to determine the timestamp of the last PM event to be included with the PM data	K. Kostro	AB/CO I. Kozsar	small	on change

Missing publications

Publications which are planned but delayed because equipment is not available yet or for other reasons

Missing publication	DIP item name/source data description	Publication contact	Data contact	Volume Bytes	Frequency	Estimated availabilit
Average bunch length	dip/acc/LHC/Class/Property/Device	K. Kostro	AB/RF A.Butterworth	8	1 min	after 2008
Total longitudinal distribution	dip/acc/LHC/Beam/LongitunalDistribution	K. Kostro	AB/BI	285.120	1 min	after 2008

Experiments to machine

Whenever the same kind of publication is expected from several experiments, they shall follow the same naming schema and field definitions so that they can be used by LHC controls in a common way. For instance the same hanshake names and values are expected from all experiments. The following table defines this.

All publications used pricipally by LHC operation shall be under /dip/EXPERIMENT/LHC/. When a single field is published, the field name shall be the DIP default (__DIP_DEFAULT__). When several items which belong together it is preferred that they are published as a single DIP publication. We will always try to prototype the publications with one experiment and others can follow then.

Item	DIP item name/source data description	CM
Experiment handshake	dip/EXPERIMENT/LHC/Handshake/* (EXPERIMENT_INJECTION, EXPERIMENT_ADJUST, EXPERIMENT_BEAMDUMP) Handshake details are described in http://lhc-commissioning.web.cern.ch/lhc-commissioning/systems/data-exchange/handshakes.htm	devic DIP. DIP. Injec Adju Bean
CMS HF Luminosity	dip/CMS/HF/LumiData	DIP.
CMS HF Luminosity histogram	dip/CMS/HF/LumiDataLH	DIP.

Leade Web Utilities

- - advanced search
- WebTopicList - all topics in alphabetical order
- WebChanges - recent topic changes in this web
- WebNotify - subscribe to an e-mail alert sent when topics change
- WebRss, WebAtom - RSS and ATOM news feeds of topic changes
- WebStatistics - listing popular topics and top contributors
- WebPreferences - preferences of this web

This topic: Leade > WebHome
Topic revision: r50 - 2010-03-02 - KrisKostro