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Upgrade Physics Activities

Conveners: Simone Pagan Griso, Sarah Demers (atlas-phys-upgrade-conveners@cernNOSPAMPLEASE.ch)

Mailing list: atlas-upgrade-physics-studies@cernNOSPAMPLEASE.ch, Meetings: Thursdays at 15:00 ([indico](#))

General information

- Mandate of the group **TODO: Add link to new mandate**
- 2019 White Paper [on future group priorities](#)
- 2017 White Paper [on future group priorities](#)

Relevant ATLAS areas coordinators/contacts

Group	Contacts	Mailing list	twiki	indico category
MC Production	John Kenneth Anders		twiki	
Upgrade Software	Andreas Salzburger		twiki	
Trigger	Anna Sfyrla, Stephanie Majewski	atlas-upgrade-tdaq-eventselection@cernNOSPAMPLEASE.ch	twiki	indico

Performance groups contacts

Group	Contacts	Mailing list	twiki	indico category
Upgrade Tracking	Liza Mijovic, Max Goblirsch	atlas-cp-tracking-upgrade@cernNOSPAMPLEASE.ch	twiki	indico
Egamma	Stephane Jezequel		twiki	
Muon	Max Goblirsch			
Tau	Martina Ojeda			
JetEtMiss	Dimitris Varouchas, Dag Gillberg	atlas-cp-jetetmiss-hllhc@cernNOSPAMPLEASE.ch		indico
Flavour tagging	Sasha Khanov	atlas-cp-flavtag-upgrade@cernNOSPAMPLEASE.ch	twiki	indico

Physics groups contacts

Group	Contacts	Mailing list	twiki	indico category
Standard Model	Claire Lee			indico
Top	Frederic Deliot (chair), Clement Helsen, Kevin Daniel Finelli	atlas-phys-top-upgrade-team@cernNOSPAMPLEASE.ch		
Higgs	Marianna Testa, Stephane Jezequel	atlas-phys-higgs-prospects@cernNOSPAMPLEASE.ch	twiki	indico
SUSY	Marija Vranjes Milosavljevic,	atlas-phys-susy-atlasupgrades@cernNOSPAMPLEASE.ch	twiki	indico

	Iacopo Vivarelli			
Exotic	Monika Wielers			
HDBS				
BLS	Pavel Reznicek			
Heavy Ions	Adam Trzupek			

Special short-term focus

Simulation

Projection guidelines

Public documents

Meetings, Mailing lists, Contact People

The physics upgrade meeting is nominally held most Thursdays at 3PM CERN time. The indico category is available here [↗](#). For announcements and other information, please subscribe to **atlas-upgrade-physics-studies@cern.ch**.

Group	Twiki	indico	Group	Twiki	indico
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ATLAS Upgrade | [twiki ↗](#) | [indico ↗](#) |

Higgs Upgrade	twiki	indico ↗	SUSY Upgrade	twiki	indico ↗
Exotics Upgrade	twiki		SM Upgrade		indico ↗
b-tagging	twiki		Large Eta Task Force (completed)	twiki	indico ↗

Contact People:

- Contact people for upgrade studies

Phase-II TDR Public plot pages:

Title	Link
Strip	https://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/UPGRADE/CERN-LHCC-2017-005/ ↗
Muon	https://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/UPGRADE/CERN-LHCC-2017-017/ ↗
Tile	https://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/UPGRADE/CERN-LHCC-2017-019/ ↗
LAr	https://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/UPGRADE/CERN-LHCC-2017-018/ ↗
Pixel	https://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/PLOTS/ITK-2018-001/ ↗
TDAQ	https://iriu.web.cern.ch/iriu/UPGRADE/CERN-LHCC-2017-020/ ↗
TDAQ IDR (Internal Document)	↗

Upgrade Physics White Paper [↗](#)

CERN Yellow report 2018

- Run2 extrapolation : Object performance
- Systematics Recommendations (agreed upon jointly with CMS) : Yellow Report Systematics
- Draft of the YR chapters for ATLAS members:
 - ◆ WG1 (SM+Top): CDS [↗](#), arXiv [↗](#)
 - ◆ WG2 (Higgs): arXiv [↗](#), CDS [↗](#)
 - ◆ WG3 (SUSY+Exotic): CDS [↗](#), arXiv [↗](#)
 - ◆ WG4 (BLS): CDS [↗](#), arXiv [↗](#)
 - ◆ WG5 (HI): CDS [↗](#), arXiv [↗](#)
- Summaries submitted to European Strategy:
 - ◆ HL-LHC summary (see also here [↗](#) for the European Strategy input submission)
 - ◆ HE-LHC summary (see also here [↗](#) for the European Strategy input submission)

Recommendations for labels in PUB note plots

The recommendations below are divided by projection type and refer to the final labels to be used for the public document. As usual during initial circulation the "Internal" corresponding label should be used, as usual.

- Smearing function studies:

```
ATLAS Simulation Preliminary  
#sqrt{s}=14 TeV, 3000 fb-1
```

- Extrapolation (using run-2 data):

```
ATLAS Preliminary  
Projection from Run 2 data  
#sqrt{s}=14 TeV, 3000 fb-1
```

- Combination plots using both extrapolations as well as smearing function studies:

```
ATLAS Preliminary  
#sqrt{s}=14 TeV, 3000 fb-1  
Simulation and Projections from Run 2 data
```

- HE-LHC projections: Same guidelines as above, depending on the projection study type, but replacing the center-of-mass energy and luminosity accordingly:

```
#sqrt{s}=27 TeV, 15 ab-1
```

Technical information

Information on SW, MC samples, and analysis code (including smearing functions)

Detailed MC production information can be found here (mostly useful for MC contact people).

On going activities:

- Open requests and Guidelines for those responsible for upgrade MC production
- Software and Computing Coordination page showing the deliverables for upgrade related activities
- Excel file to request MC samples
- Bug/feature tracking

Information on existing upgrade samples:

- Brian's convenient (unofficial) web page [☞](#) showing the list of available MC15 (rel.20) samples
- Brian's convenient (unofficial) web page [☞](#) showing the list of available MC12 (rel.17) samples

Information on tags:

- MC15 Upgrade Information with the definition of the r and s tags
- MC12 Upgrade samples with the definition of the r and s tags
- DPD production home page with the description of the p tags
- Tag interpreter. [☞](#) To get info about a tag: select "AMI Web", then "Nomenclature"; at the top of the page use the scroll down menu "AMITags"
- Information on production tags from atlprod [☞](#)
- Information on COOL tags
- Explanation of new Geometry tag naming scheme
- Database containing GEO definitions [☞](#)

A set of detector performance functions (including smearing functions that account for detector resolution) can be used on truth objects to derive realistic detector-level quantities. These functions are described in UpgradePerformanceFunctions.

Information on Tracking with rel20 can be found here.

Information on correction factors for Phase-II upgrade used in extrapolations of Run-2 analyses are being collected here

Public results on upgrade (including LHC schedule)

Results are made public in form of PUBNOTES. The procedure for the PUB note approval can be found here. Under exceptional circumstances, results can be made public as PLOTS following the procedure outlined here

- ATLAS Upgrade Physics results
- ATLAS Upgrade Event Displays
- LHC schedule and luminosity projections for the long term are attached to this page (as pdf and pptx, note that there are 3 pages)[↗](#)
- There is a nice summary figure of the LHC/HL-LHC plan at the bottom of this web page[↗](#)
- LHCscheduleMTP2016.pdf: LHC schedule proposed to CERN council in June 2015

Other links to results/reports:

- LHC Performance/LARP Workshop October 2015[↗](#)
- ATLAS Large Eta Task Force Report - INTERNAL[↗](#)
- CMS: Technical Proposal for the Phase-II Upgrade of the CMS Detector[↗](#)
- CMS Phase II Upgrade Scope Document[↗](#)
- CMS Physics Upgrade Results
- Snowmass Reports[↗](#)
- European Strategy Group[↗](#)

LHCC meetings are linked here[↗](#).

Major updates:

-- SPaganGriso - 01-Aug-2019

%RESPONSIBLE% SPaganGriso

%REVIEW% **Never reviewed**

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