

-- HelenHayward - 09 Jan 2014

Samples

For general upgrade samples please see:

https://twiki.cern.ch/twiki/bin/viewauth/Atlas/UpgradePhysicsActivities#Information_on_MC_samples

Here are the ITK alternative geometry specific samples:

Sample	Description	process
group.det-slhc.mc12_14TeV.105200.McAtNloJimmy_CT10_ttbar_LeptonFilter	Vivek's samples with reduced number of strip layers in the barrel	ttbar
user.nreadiof.MC12.4907070.100k.multi_electrons.ESD.livEC02.pileup200.v3.281113	Liverpool Pixel Endcap with LOI barrel	multielectron
	Very forward pixel geometry	

Requested Samples:

samples (25k-100k events): pi, mu, (e) mu=1,140,200 (multi lepton samples with discrete energy values (as before)) -----> requested from Pippa?

Beamspot missing layer layouts (incl no stub) CMOS granularity layouts material variations (e samples) 100k: tt for b-tagging, high pT jet studies no stub layout CMOS granularity layouts

Geometry files to be put in svn

LOI related Datasets

- UpgradeSimulation2012ITkLoI NEW
- UpgradeSimulation2011Utopia
- UpgradeSimulation2012Utopia
- UpgradeSimulation2012Cartigny

TaskList

Note W.I.P = Work In Progress, T.B.S = To be started

Topic	Questions/Tasks	Status	People	Last Update
extended beamspot, crab kissing : HIGH PRIORITY	Production of Samples	W.I.P	Andreas Korn	13/01/13
	Check Tracking performance			13/01/13
		ttbar sample available	Vivek Jain	13/01/13

Reduced number of strip layers , stub barrel HIGH PRIORITY <ul style="list-style-type: none"> • Viveks samples, effect of modifying trackparameters • Mask stub layer • single sided modules 	Sample Implementation			
	Validation	Done	Vivek Jain	13/01/13
	Check effect on tracking Performance	Well established: See latest talks in ITK Simulaiton meetings	Vivek Jain	13/01/13
	Check effect on b-tagging Performance	TBS	Vivek Jain	13/01/13
CMOS granularity studies HIGH PRIORITY	Layout Implementation	TBS, need recommended granularities		13/01/13
	Layout Validation			13/01/13
	Tracking Performance			13/01/13
	Sample Production			13/01/13
	Updated Pile up numbers for various Pile up	W.I.P	Nick Edwards	13/01/13
very forward layouts HIGH PRIORITY <ul style="list-style-type: none"> • Produce geometry files, produce samples, or help upgrade physics here? 	Layout Implementation	in the DDDDB as ATLAS-SLHC-02-01-00	Nick Styles/ Yanping	13/01/13
	Tracking Performance		Yanping Huang, Jike Wang	13/01/13
	Understanding Track resolution problem HIGH PRIORITY			
material distortions	<ul style="list-style-type: none"> • Production of sample with +/-30% strip material • Production of sample with +/-30% strip+pixel material 	SCT+Pix Geometry files available for use by Fatras. Not validated yet	Nathan Radioff, Helen Hayward	13/01/13
	Validation of samples	T.B.S		
	Evaluation of effect of material on tracking performance (also physics performance?)			13/01/13
	material budget issues		Ralph Shaefer	
Strip endcaps aka Petals <ul style="list-style-type: none"> • plus performance? 	N sensor simulation		Jike Wang	13/01/13
	Building Si strip endcaps with petal description		Jike Wang, Nika Valencic, Urmilla	

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			Soldevila Serrano	
L1 track studies :	axial doublets for self seeded track trigger. ROI, data driven trigger		Rustem Ospanov	13/01/13
Pixel clustering • NN?		Cecille is finishing her Qualification task	Cecille Deterre	13/01/13
Alternative Layouts: Conical	Implementation		Sergey Burdin, Nathan Readioff	13/01/13
	Validation		Sergey Burdin, Nathan Readioff	13/01/13
	Performance studies			13/01/13
Altrenative Layout: EndCap Ring	Implementation		Sergey Burdin, Nathan Readioff	13/01/13
	Validation		Sergey Burdin, Nathan Readioff	13/01/13
	Performance studies			13/01/13
Alternative Layout: Alpine Pixel	Implementation		Teddy Tedorov, Sabine Elles	13/01/13
	Validation			13/01/13
	Performance Studies			13/01/13
Fluency calculations • test and compare different layouts including VF		Last results for LOI ↗	Ian Dawson, Paul Miyagawa	13/01/13
Pixel service implementations • Can we simulate this?				13/01/13
Alignment • Are all the proposed layouts "easily alignable"?				13/01/13
Layout comparison	Tracking performance = Exploring track parameter resolutions via Simulation in the ATLAS+Itk framework		Matt Epland, Ayana Arce	

	Btagging performance	Alexander Khanov
ISF Fatras for ITK simulation		Nick Edwards, Phil Clarke, Steve Lloyd
InDetUpgradePerformanceAnalysis		Nick Edwards
Ibeam simulation		Shih-Chieh Hsu

Tools

We are working on a standardized checklist to evaluate layouts:

1. Tests to be passed in IDres before being passed to step 2. (e.g. hits, coverage, redundancy)
2. Tests to be passed in FatRas before being passed to step 3. cross check IDRes results
3. FullSim studies with single particles in ID only geometry: resolution check, fake rate check, compare single muons truth tracking with pattern reco
4. FullSim studies with physics signals in ID only geometry
5. Geometries passed to Upgrade Physics group for full studies.

How Do I ?

As your first stop, please visit (and add to) our share point:

- <https://espace.cern.ch/atlas-perf-idtracking-sharepoint/upgrade/default.aspx>

To generate LOI datasets:

https://twiki.cern.ch/twiki/bin/viewauth/Atlas/UpgradeSimulation2012ITkLoI#Sim_AN1

Latest Releases/Tags

The latest athena release for running ITK studies is 17.3.10.1 - please note that this release is compatible with both the ITk LoI layout and IBL, but consequently compatibility with the old 'Utopia' layout is broken. To run Utopia or Utopia-based layouts, 17.3.4.7 can be used.

The recommended Geometry Database tag for the ITk LoI layout is ATLAS-SLHC-02-00-00 (update of ATLAS-SLHC-01-03-00, with identical tracker but more recent Calo and Muons tags).

The recommended Conditions tags are the OFLCOND-ATLAS-HL-LHC-XX series (e.g. OFLCOND-ATLAS-HL-LHC-00, OFLCOND-ATLAS-HL-LHC-01, ...). However, there are some known problems with calorimeter pile-up settings in these tags which are being fixed. This should not affect Tracker stand-alone running however.

Information for Development and Testing of Layouts

- ITkLayoutDevelopment^{NEW} - Useful information for developing new layouts, using text files to override parameters in the Geometry Database.

Results/Plots for Phase-2

- [ITkLoIPhase2Plots](#) NEW

Inner Detector upgrade simulation

The main ID simulation packages:

- UpgradeIdGeant4: full simulation integrated into main software releases (focused on ID part)
- UpgradeFatras: a fast parametric simulation

Common definitions

- UpgradeDetectorGeometryVersions: description of different tracker layouts
- UpgradeDefinitionEfficiencyFakeRate
- UpgradeDefinitionPythiaTune: interaction model for minimum bias events

Performance studies

- UtopiaTargetLayout: target layout for UTOPIA simulations
- UtopiaMaterials: material definitions for UTOPIA simulations
- UpgradePerformancePlots
- InDetUpgradePerformanceAnalysis
- AlternativeLayoutTrackingPerformance

Other useful information in [IBLPerformanceTaskForce](#).

Links

- [Sharepoint](#)
- [atlas-upgrade-itk-simu-perf e-group mailing list](#)
- [ATLAS Detector Description Database](#)
- [ID-Subcommittee in Indico](#)
- [ATLAS Installation System](#)
- [Global KV Portal](#)
- [Panda Monitor](#)
- [Cool Tag Browser](#)
- [Castor viewer](#)
- [DQ2 storage viewer](#)

Documents

- Letter of Intent for the Phase-II Upgrade of the ATLAS Experiment, CERN-LHCC-2012-022 ; LHCC-I-023
- Tracking Performance of the Proposed Inner Tracker Layout for the ATLAS Phase-II Upgrade , ATL-UPGRADE-PUB-2013-001
- Final Report: ATLAS Phase-2 Tracker Upgrade Layout Task Force, ATL-UPGRADE-PUB-2012-004
- Performance Specifications of the Tracker Phase II Upgrade, ATL-UPGRADE-PUB-2012-003
- Letter of Intent for the Phase-I Upgrade of the ATLAS Experiment, CERN-LHCC-2011-012 ; LHCC-I-020
- ATLAS Insertable B-Layer Technical Design Report
- ATLAS Inner Detector Upgrade Simulation (write-up), Abdel Abdesselam

- Layout Requirements and Options for a new Inner Tracker for the ATLAS Upgrade, N.Hessy,J.Tseng
 - Concepts, Design and Implementation of the ATLAS New Tracking, ATL-SOFT-PUB-2007-007
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This topic: Sandbox > ITKSimulationPerformance

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