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Cern Web Service (Personal Website)

This twiki stopped updating since June 2018. A personal website was build up following this tutorial:
https://cernbox.web.cern.ch/cernbox/en/web/personal_website_content.html

The new website is : <https://cern.ch/shhan>

1.DESY computer resources

DESY hosts

Hosts working with Qsub:

```
nafhh-atlas01.desy.de ~ nafhh-atlas02.desy.de
```

Hosts working with HTCondor:

```
naf-atlas11.desy.de ~ naf-atlas16.desy.de.
```

submit HTCondor jobs:

Since Dec. 2017, the DESY local computing system has been updated to HTcondor
<https://confluence.desy.de/pages/viewpage.action?pageId=67639562>

The following commands is the cheat list from qsub to HTcondor

QSub (SGE)	HTCondor
qsub 123.job	echo "executable = 123.job" > 123.sub condor_submit 123.sub (more details below)
qstat	condor_q
qdel	condor_rm

condor_rm [username]: kill all your jobs

While submitting jobs, it has to be changed from

```
qsub -q short.q,default.q -l os=sld6 -l site=hh -l h_vmem=8G -o ${base_dir}/out/${jobname}_${i}job
```

To

```
rm -fr ${submitfilename}
echo "executable = ${jobfilename}" > ${submitfilename}
echo "should_transfer_files = Yes" >> ${submitfilename}
echo "when_to_transfer_output = ON_EXIT" >> ${submitfilename}
echo "input = ${base_dir}/input/${jobname}_${i}job.txt" >> ${submitfilename}
echo "output = ${base_dir}/out/${jobname}_${i}job.out2" >> ${submitfilename}
echo "error = ${base_dir}/err/${jobname}_${i}job.err2" >> ${submitfilename}
echo "log = ${base_dir}/log/${jobname}_${i}job.log2" >> ${submitfilename}
echo "+RequestRuntime = 43200" >> ${submitfilename}
echo "universe = vanilla" >> ${submitfilename}
echo "RequestMemory = 4G" >> ${submitfilename}
echo "queue" >> ${submitfilename}
condor_submit ${submitfilename}
```

The example scripts are in this path:

```
/afs/desy.de/user/h/hans/public/condor_example
```

DESY HTCondor queue :

On 25th May 2018 there are ~7500 cpus, HTCondor can distribute cpus for jobs itself

HTCondor is going to have more and more cpus, please always check <http://bird.desy.de/stats/day.html>

On 25th May 2018 there are still ~500 cpus for Qsub (SGE), please always check <http://bird.desy.de/status/day.html>

DESY disks

Login <https://amfora.desy.de> to check AFS and NAF quota

AFS is usually 16G, NAF is 1T (default)

DESY Tire2

The quota on DESY-HH_LOCALGROUPDISK will be 20T (default) after applying for atlas/de VO

The transferred files on this disk can be found under /pnfs path

2. IHEP computer resources

<http://afsapply.ihep.ac.cn:86/quick/>

IHEP hosts:

SLC6 hosts:

```
lxslc6.ihep.ac.cn
atlasui01.ihep.ac.cn
atlasui04.ihep.ac.cn ~ atlasui06.ihep.ac.cn (IHEP inner hosts)
```

SLC5 hosts:

```
atlasui03.ihep.ac.cn
lxslc5.ihep.ac.cn
```

submit HTCondor jobs:

before doing anything, use the command:

```
export PATH=/afs/ihep.ac.cn/soft/common/sysgroup/hep_job/bin5:$PATH # SLC5
export PATH=/afs/ihep.ac.cn/soft/common/sysgroup/hep_job/bin:$PATH # SLC6
```

Then you use the following cheat table

Qsub	HTCondor
qsub	hep_sub
qstat	hep_q
qdel	hep_rm

hep_rm -a: kill all the jobs

hep_q -u yourIhepUserName: check your jobs status

normally it is very similar as using Qsub, we just need use the command:

```
hep_sub job.sh -o out -e err -mem 4800 -g atlas
```

other optional arguments:

```
-os OPERATINGSYSTEM, --OperatingSystem OPERATINGSYSTEM
# set the system version of resource you want.
-prio PRIORITY, --priority PRIORITY
# set the inner job priority of your own jobs.
-np NUMBERPROCESS, --numberprocess NUMBERPROCESS
# set the total cores required by your job.
```

The example scripts are in this path (do not submit in /workfs or /afs):

```
/publicfs/atlas/atlasnew/higgs/hgg/ShuoHan/ATLAS/job1_data2016
```

IHEP HTCondor queue :

one universal queue sharing 4300 cpus, the working time is infinite, HTCondor can distribute cpus for jobs itself

IHEP disks :

disk name	disk path	size	backup	Can submit HTCCondor jobs
afs	/afs/ihep.ac.cn/users/	500MB	unknown	no
workfs	/workfs/atlas/	10GB	yes	no
scratchfs	/scratchfs/atlas/	500GB	delete every 2 weeks	yes
publicfs atlasnew	/publicfs/atlas/atlasnew/higgs/hgg/	320TB shared	no	yes
publicfs codesbackup	/publicfs/atlas/codesbackup/	320TB shared	yes	yes

IHEP Tier2

The quota on BEIJING-LCG2_LOCALGROUPDISK will be 8T after applying for atlas/cn VO

But those files (on disk /dpm) should be downloaded to Tier3 anyway by command "dpns-ls -l" and "rfcp", they cannot be directly read

3. ATLAS environment

Setup ATLAS environment:

Setup ATLAS Environment:

```
export ATLAS_LOCAL_ROOT_BASE=/cvmfs/atlas.cern.ch/repo/ATLASLocalRootBase
alias setupATLAS='source ${ATLAS_LOCAL_ROOT_BASE}/user/atlasLocalSetup.sh'
setupATLAS
```

Then, setup Root:

```
lsetup root
```

Certificate, ATLAS VO, Rucio, AMI

Certificate: "New Grid User Certificate" in <https://ca.cern.ch/ca/>

Setup certificate on DESY/IHEP/Lxplus:

```
openssl pkcs12 -in usercert.p12 -nokeys -clcerts -out ~/.globus/usercert.pem
openssl pkcs12 -in usercert.p12 -nocerts -out ~/.globus/userkey.pem
chmod 400 ~/.globus/userkey.pem
chmod 444 ~/.globus/usercert.pem
voms-proxy-init voms atlas
```

ATLAS VO page (request here): <https://voms2.cern.ch:8443/voms/atlas/user/home.action>

Rucio transfer request page: <https://rucio-ui.cern.ch/r2d2/request>

Rucio commands:

```
voms-proxy-init -voms atlas
lsetup rucio
rucio list-dids DATASETNAME
rucio list-file-replicas DATASETNAME
rucio get DATASETNAME
rucio list-rules --file FILETYPE (e.g. data16_13TeV):FILEPATH
```

AMI page: <https://ami.in2p3.fr/>

pyAMI commands: <https://ami.in2p3.fr/pyAMI/>

```
voms-proxy-init -voms atlas
lsetup pyami
ami show dataset info DATASETNAME
```

How to read Ntuple from CERN eos disk (see

<https://confluence.desy.de/display/IS/How+to+use+Grid+resources+in+batch+jobs>)

```
voms-proxy-init -voms atlas
lsetup xrootd rucio root
root -l
root [0] TFile *mytuple =TFile::Open("root://eosatlas.cern.ch/eos/atlas/atlascerngroupdisk/phys-
```

While submitting jobs in condor, in the job-file, one should type

```

export X509_USER_PROXY=${PATHTOPROXY}
echo "#!/bin/expect" > voms.sh
echo "spawn voms-proxy-init -voms atlas" >> voms.sh
echo "expect 'Enter GRID pass phrase for this identity:'" >> voms.sh
echo "send 'your_proxy_passwd\r'" >> voms.sh
echo "interact" >> voms.sh
expect voms.sh
lsetup xrootd rucio root

```

and in condor submit-file, type

```
transfer_input_files = ${PATHTOPROXY}
```

Where the \$PATHTOPROXY is default to be \$X509_USER_PROXY in host, but need to be copied to a readable path, e.g. cp /tmp/x509up_u2xxxx \${HOME}/nfs/proxyfile/

ATLAS Configs/Tools

Truth Type and Truth origin :

<https://gitlab.cern.ch/atlas/athena/blob/master/PhysicsAnalysis/MCTruthClassifier/MCTruthClassifier/MCTruthClassifier>

Electron / Photon ID config:

<http://atlas.web.cern.ch/Atlas/GROUPS/DATABASE/GroupData/ElectronPhotonSelectorTools/offline/>

Binary location of e/gamma ID:

<https://gitlab.cern.ch/atlas/athena/blob/master/PhysicsAnalysis/ElectronPhotonID/ElectronPhotonSelectorTools/ElectronPhotonID>

e/gamma Author definitions:

<https://gitlab.cern.ch/atlas/athena/blob/master/Event/xAOD/xAODEgamma/xAODEgamma/EgammaDefs.h>

e/gamma Enum (ConversionType, EgammaType, ShowerShapeType):

<https://gitlab.cern.ch/atlas/athena/blob/master/Event/xAOD/xAODEgamma/xAODEgamma/EgammaEnums.h>

Tracking Enum :

<https://gitlab.cern.ch/atlas/athena/blob/master/Event/xAOD/xAODTracking/xAODTracking/TrackingPrimitives.h>

Isolation working points twiki: <https://twiki.cern.ch/twiki/bin/viewauth/AtlasProtected/IsolationSelectionTool>

Lowest un-prescaled trigger: <https://twiki.cern.ch/twiki/bin/view/Atlas/LowestUnprescaled>

Cross-Section and Branching-Ratio page: <https://twiki.cern.ch/twiki/bin/view/LHCPhysics/LHCHXSWG>

Current Luminosity: <https://twiki.cern.ch/twiki/bin/view/AtlasPublic/LuminosityPublicResultsRun2>

GRL page: http://atlasdqm.web.cern.ch/atlasdqm/grlgen/All_Good/

Lumi-calculator: <https://atlas-lumicalc.cern.ch/>, select "Create output plots and ntuples (--plots)" to create PRW input

Athena nightly builds: <http://atlas-nightlies-browser.cern.ch/~platinum/nightlies/globalpage>

MC JobOptions SVN: <https://svnweb.cern.ch/trac/atlasoff/browser/Generators/MC15JobOptions/trunk/share>

ATLAS Twiki and Tutorials

PRW config page: <https://twiki.cern.ch/twiki/bin/viewauth/AtlasProtected/ExtendedPileupRewighting>

MC Reconstruction twiki: <https://twiki.cern.ch/twiki/bin/view/AtlasComputing/RecoTf> and

<https://twiki.cern.ch/twiki/bin/view/Atlas/PileupMC2016>

MC production twiki: <https://twiki.cern.ch/twiki/bin/viewauth/AtlasProtected/AtlasProductionGroup>

Derivation twiki: <https://twiki.cern.ch/twiki/bin/viewauth/AtlasProtected/DerivationProductionTeam>

HGamma twiki: <https://twiki.cern.ch/twiki/bin/viewauth/AtlasProtected/HggDerivationAnalysisFramework>

MxAOD twiki: <https://twiki.cern.ch/twiki/bin/view/AtlasProtected/MxAODs>

Creating Event-Loop package:

<https://twiki.cern.ch/twiki/bin/viewauth/AtlasComputing/SoftwareTutorialxAODAnalysisInROOT>

Analysis Base tutorial: <https://atlassoftwaredocs.web.cern.ch/ABtutorial/>

ATLAS tutorial meetings: <https://indico.cern.ch/category/397/>

ATLAS software tutorial twiki:

<https://twiki.cern.ch/twiki/bin/view/AtlasComputing/SoftwareTutorialSoftwareBasics>

PubCome Latex twiki: <https://twiki.cern.ch/twiki/bin/viewauth/AtlasProtected/PubComLaTeX>

4. Softwares

Get a ssh Key here : <https://gitlab.cern.ch/help/ssh/README>

Add the ssh Key here : <https://gitlab.cern.ch/profile/keys>

Start a new project here : <https://gitlab.cern.ch/dashboard/projects>

Basic commands here : <https://gitlab.cern.ch/help/gitlab-basics/README.md>

Some basic commands:

```
git clone SSH_PATH
git checkout BRANCH_OR_TAG
git pull
git add --all
git commit -am "something"
git push origin BRANCH
```

Cmake

CmakeLists.txt of Athena based package :

<https://gitlab.cern.ch/atlas-hgam-sw/HGamCore/blob/master/HGamTools/CMakeLists.txt>

CmakeLists.txt of local code : https://gitlab.cern.ch/shhan/Purity_2D/blob/master/CMakeLists.txt

Use Virtual machine (or Docker) to run Athena on your computer

Docker: <https://docs.docker.com/docker-for-mac/>

Docker with Athena: <https://twiki.cern.ch/twiki/bin/viewauth/AtlasComputing/AthenaMacDockerSetup>

```
docker pull lukasheinrich/atlas_base_fromhepsw
docker run --privileged -it -v $HOME:$HOME -e DISPLAY=${ip}:0 lukasheinrich/atlas_base_fromhepsw
```

CERNVM:

<https://atlas-vp1.web.cern.ch/atlas-vp1/blog/tutorial/running-vp1-on-any-system-in-a-virtual-machine/>

Follow this page until `SetupATLAS` , so you have a linux virtual machine in ATLAS environment

Administrator (in case you want to use sodo): account : atlas, password: boson

ATLAS Event Display

Latest event: <http://atlas-live.cern.ch/>

Public plots: <https://twiki.cern.ch/twiki/bin/view/AtlasPublic/EventDisplayPublicResults>

Event Pickup (JML and ESD): <https://twiki.cern.ch/twiki/bin/view/AtlasComputing/Atlantis>

Atlantis: download latest version here (<http://atlantis.web.cern.ch/atlantis/>), run in a system where Java is available

VP1:

```
asetup 20.7.9.2,AtlasProduction, here
vp1 DATASET.ESD.root
```

EUTelescope

Home Page: <http://eutelescope.web.cern.ch>

Setup on DESY NAF disk:

```
setupATLAS
lsetup "root 6.10.04-x86_64-slc6-gcc62-opt"
export ILCSoft=/nfs/dust/atlas/user/hans/EUTelescope_desy
cd $ILCSoft
git clone -b dev-desynaf https://github.com/eutelescope/ilcinstall $ILCSoft/ilcinstall
cd $ILCSoft/ilcinstall
./ilcsoft-install -i examples/eutelescope/release-standalone.cfg
```

5. Shift links

- ADCoS links summary: https://adcos.web.cern.ch/adcos/For_ADCoS_Shifters/
- ADCVCR control room:
<https://twiki.cern.ch/twiki/bin/view/AtlasComputing/ADCVirtualControlRoom>
 - ◆ Jabber services: <https://www.jabberes.org/servers/>
 - ◆ Room: adcvc
 - ◆ Server: conference.chat.uio.no
 - ◆ Password: point1

6. Internal Code/Packages

- Template fit and ABCD method: https://gitlab.cern.ch/shhan/Purity_2D
 - E->gamma fake rate measurement: <https://gitlab.cern.ch/shhan/TagAndProbeFrame>
-

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