Simulando UED no CMS utilizando o Grid

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CRAB (CMS Remote Analysis Builder)

- Utilizamos o CRAB para criar jobs de simulação de UED no CMS e submetê-los no GRID

- Permite publicar os eventos simulados (com ou sem detector) no DBS do CMS.

Requisitos

- Certificado de Grid Válido.
- Registro na CMS Virtual Organization (VO)
- Registro no siteDB (necessário para publicação)
- Ter acesso à lxplus ou uma SLC5 User Interface (access).

Preparando o ambiente para o CRAB

1. Acesso a LCG ou OSG User Interface:

source /afs/cern.ch/cms/LCG/LCG-2/UI/cms_ui_env.csh (ex: LCG na lxplus)

2. Preparar uma área do CMSSW:

cmsrel CMSSW_X_X_X

cd CMSSW_X_X_X/src/

cmsenv

3. Preparar o CRAB:

source /afs/cern.ch/cms/ccs/wm/scripts/Crab/crab.csh

Simulação de eventos

1. Simulação Dividida em dois passos

   geração e simulação do detector

2. Gerador de mUED: pythia v6.4.20

   1/R = 300, 500, 700, 900

3. Geração inclusiva com filtro para canal de interesse

   output: arquivos “.root” do tipo EDM

4. Simulação do detector com FastSimulation

   trigger incluso

Criação e submissão de jobs

- Controlada pelo crab.cfg
- Dividido em seções:

  Seção [CMSSW]: datasetpath, pset, splitting parameters, output_file

  Seção [USER]: return_data, copy_data etc...

Criação e submissão de jobs

- Para criar os jobs:

crab -create

- Cria um diretório crab_0_data_hora, onde serão guardados os jobs e os outputs.

```
Pythia_H0_pyupda_7TeV_cfi.py
Pythia_H0_pyupda_7TeV_cfi.pyc
Pythia_H0_pyupda_cfi.py
Pythia_H0_pyupda_cfi.pyc
QCDForPF_7TeV_cfi.py
QCDForPF_7TeV_cfi.pyc
QCDForPF_cfi.py
QCDForPF_cfi.pyc
QCD_Pt_120_170_7TeV_cfi.py
QCD_Pt_120_170_7TeV_cfi.pyc
QCD_Pt_120_170_cfi.py
QCD_Pt_120_170_cfi.pyc
QCD_Pt_15_20_7TeV_cfi.py
SinglePiPt100_cfi.pyc
SinglePiPt10_cfi.py
SinglePiPt10_cfi.pyc
SinglePiPt1_cfi.py
SinglePiPt1_cfi.pyc
SinglePiPt60EHCAL_cfi.py
SinglePiPt60EHCAL_cfi.pyc
SingleTaupt_50_cfi.py
SingleTaupt_50_cfi.pyc
TT_7TeV_mcatnlo_cff.py
TT_7TeV_mcatnlo_cff.pyc
TT_TuneD6T_7TeV_pythia6_evtgen_cff.py
TT_TuneD6T_7TeV_pythia6_evtgen_cff.pyc
bJpsiX_filt_cfi.py
bJpsiX_filt_cfi.pyc
cerncrab.cfg
crab.cfg
crab.history
crab_0_100924_175318
crab_0_100924_181239
crab_0_100924_183954
crab_0_100924_184612
dbs_info.txt
noAbortPDGid_custom.py
relval_generation_module.py
uration/Generator/python $
```

Criação e Submissão

- Para submeter os jobs

  crab -submit

- Submete-se uma tarefa específica com o comando

  crab -submit -c <nomedoprojeto>

Verificando o status

Para verificar o andamento do projeto :

crab -status

ou

crab -status -c <nomedoprojeto>

Retorna link para monitoramento dos jobs no dashboard:

http://dashb-cms-job-task.cern.ch/taskmon.html#task=tanjos_crab_0_100924_183954_qug802

CMS dashboard

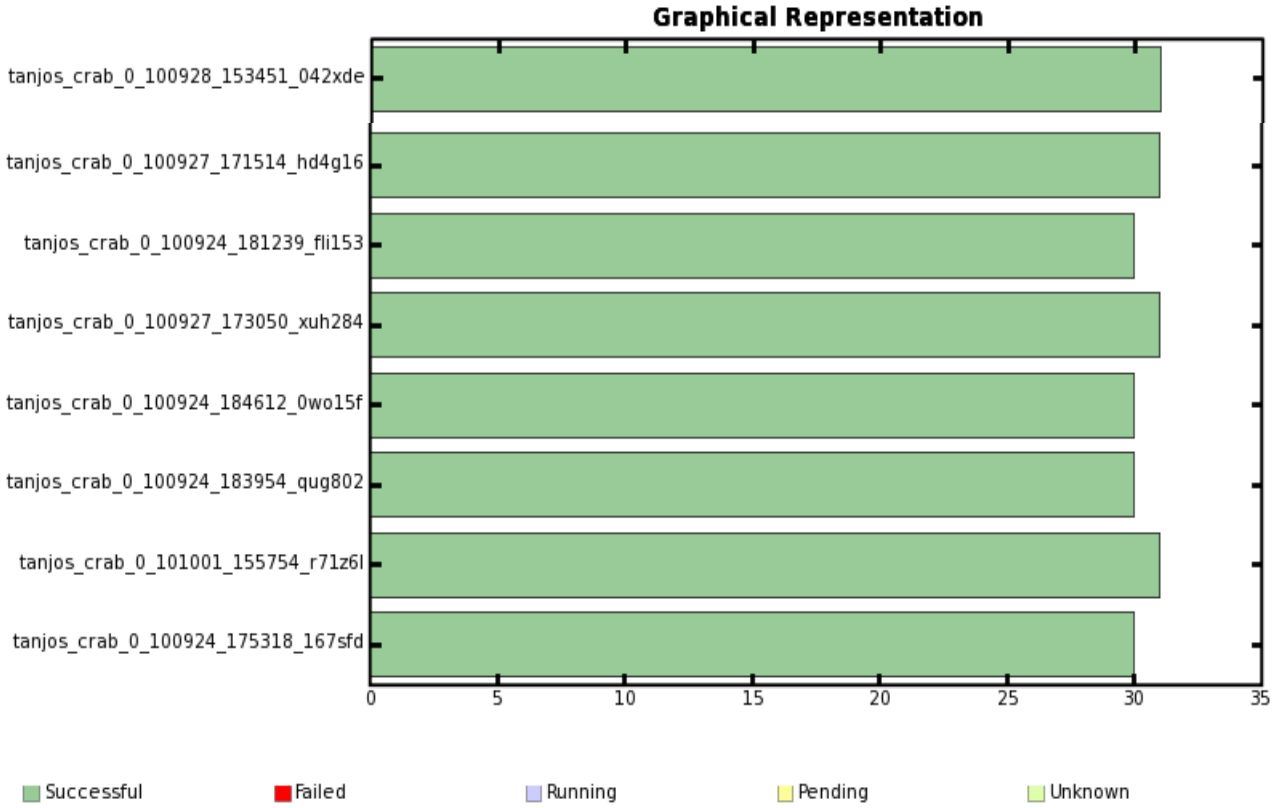
TASK MONITORING

Select a User: TiagoAnjos | Select a Time Range: Last Month | Refresh: 5 Minutes | Help | User Support

Job Processing is not completed unless job GRID status is DONE. This page does not track further steps inside CRAB Server. Please ignore the GRID status for local submissions.

TaskMonitorId	Num of Jobs	Pending	Running	Appl Successful	Failed	Unknown	Completed Successfully	Consumed Time	Plots
tanjos_crab_0_100924_175318_167sfd	30	0	0	30	0	0	DONE	Time Info	Plot Selection
tanjos_crab_0_100924_181239_fli153	30	0	0	30	0	0	DONE	Time Info	Plot Selection
tanjos_crab_0_100924_183954_qug802	30	0	0	30	0	0	DONE	Time Info	Plot Selection
tanjos_crab_0_100924_184612_0wo15f	30	0	0	30	0	0	DONE	Time Info	Plot Selection
tanjos_crab_0_100927_171514_hd4g16	31	0	0	31	0	0	30 out of 31	Time Info	Plot Selection
tanjos_crab_0_100927_173050_xuh284	31	0	0	31	0	0	26 out of 31	Time Info	Plot Selection
tanjos_crab_0_100928_153451_042xde	31	0	0	31	0	0	DONE	Time Info	Plot Selection
tanjos_crab_0_101001_155754_r71z6l	31	0	0	31	0	0	DONE	Time Info	Plot Selection
Sum Total	244	0	0	244	0	0	-	-	-

Graphical Representation



Gmail - Arranjos para mestrado - tia... | WorkBookCRABTutorial < CMS < T... | Task Monitoring

CMS dashboard — TASK MONITORING

Select a User: TiagoAnjos | Select a Time Range: Last Month | Refresh: 5 Minutes | Help | User Support

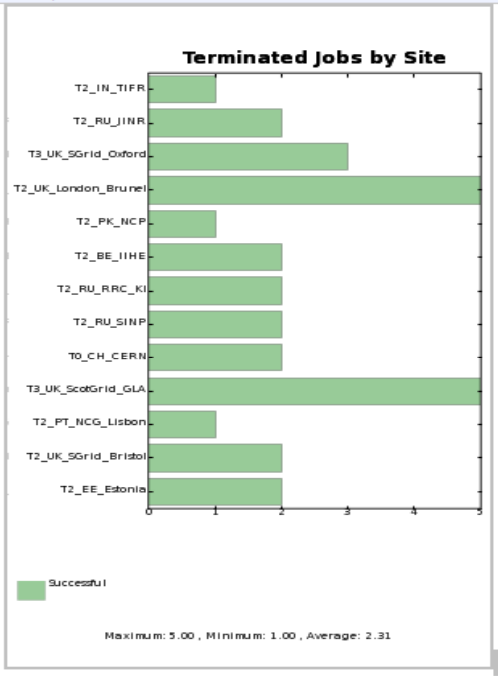
Task: tanjos_crab_0_100924_175318_167sfd All Jobs Back to all Tasks This Task

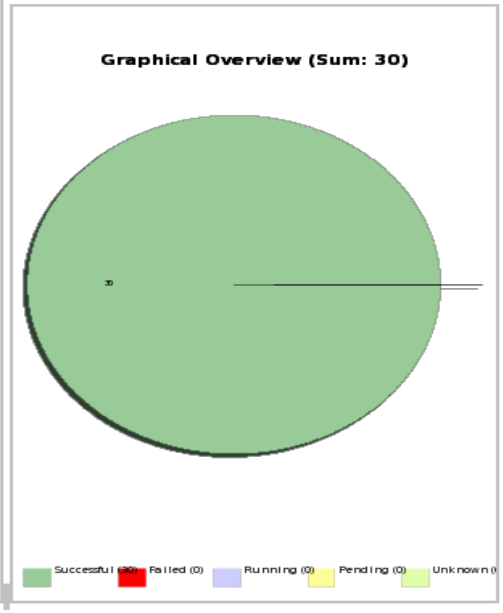
Job Processing is not completed unless job GRID status is DONE. This page does not track further steps inside CRAB Server. Please ignore the GRID status for local submissions.

TaskMonitorId	Num of Jobs	Pending	Running	Appl Successful	Failed	Unknown	Completed Successfully	Consumed Time	Plots
tanjos_crab_0_100924_175318_167sfd	30	0	0	30	0	0	DONE	Time Info	Plot Selection

Dashboard Plots

Successful Jobs Distributed by Site | Processed Events by Site | Terminated Jobs in terms of Success/Failures | Application Failed Jobs by Reason of Failure | Grid Aborted Jobs by Reason of Failure | Terminated Jobs by Site | Processed Events Cumulative Plot | Terminated Jobs Distributed over Time





Click on a plot to increase its size.

SchedulerJobId	Id in Task	Appl Status	Appl Exit Code	Grid End Status	Retries	Site	Submitted	Started	Finished
https://wms219.cern.ch:9000/YuVrxl2Up2ZZM9fLcbJIdQ	1	Appl Succeeded	0	Done	1	T0_CH_CERN	2010-09-24 15:54:40	2010-09-24 15:55:57	2010-09-24 16:21:56
https://wms219.cern.ch:9000/AXIFLfz79jky_ZtAWceO7Q	2	Appl Succeeded	0	Done	1	T2_UK_SGrid_Bristol	2010-09-24 15:54:40	2010-09-24 15:55:52	2010-09-24 16:31:14
https://wms219.cern.ch:9000/8nlhoDy3TxCr3nXWx1fAog	3	Appl Succeeded	0	Done	1	T3_UK_ScotGrid_GLA	2010-09-24 15:54:40	2010-09-24 16:11:34	2010-09-24 17:38:14
https://wms219.cern.ch:9000/KBfzHnfSvAl489csTqFJlw	4	Appl Succeeded	0	Done	1	T2_UK_London_Brunel	2010-09-24 15:54:40	2010-09-24 15:59:57	2010-09-24 16:46:23
https://wms219.cern.ch:9000/UUuxENBzYVTfMytm5QbYpA	5	Appl Succeeded	0	Done	1	T3_UK_SGrid_Oxford	2010-09-24 15:54:40	2010-09-24 15:55:29	2010-09-24 16:25:21
https://wms219.cern.ch:9000/u9cZJxhuzsMRioI0wUIlQg	6	Appl Succeeded	0	Done	1	T2_IN_TIFR	2010-09-24 15:54:40	2010-09-25 02:56:17	2010-09-25 03:25:42
https://wms219.cern.ch:9000/T2qGUNMOZW6YnXqxT6KBsQ	7	Appl Succeeded	0	Done	1	T2_EE_Estonia	2010-09-24 15:54:40	2010-09-24 15:57:26	2010-09-24 16:36:38
https://wms219.cern.ch:9000/GSMO6DMi8ZW40pizBoONSQ	8	Appl Succeeded	0	Done	1	T2_UK_London_Brunel	2010-09-24 15:54:40	2010-09-24 16:10:19	2010-09-24 16:41:42
https://lb006.cnaf.infn.it:9000/veNHHNH3FJ79T0kfaWip8w	9	Appl Succeeded	0	Done	2	T2_UK_London_Brunel	2010-09-27 13:43:57	2010-09-27 13:47:55	2010-09-27 14:15:45

Concluído

Recuperando os arquivos

- Quando os jobs estiverem prontos (*Done*):

crab -getoutput -c <nomedoprojeto>

- Isso recupera os resultados dos jobs para o diretório *res* dentro da tarefa em questão.

Publicando

1. Após recuperar os jobs prontos com

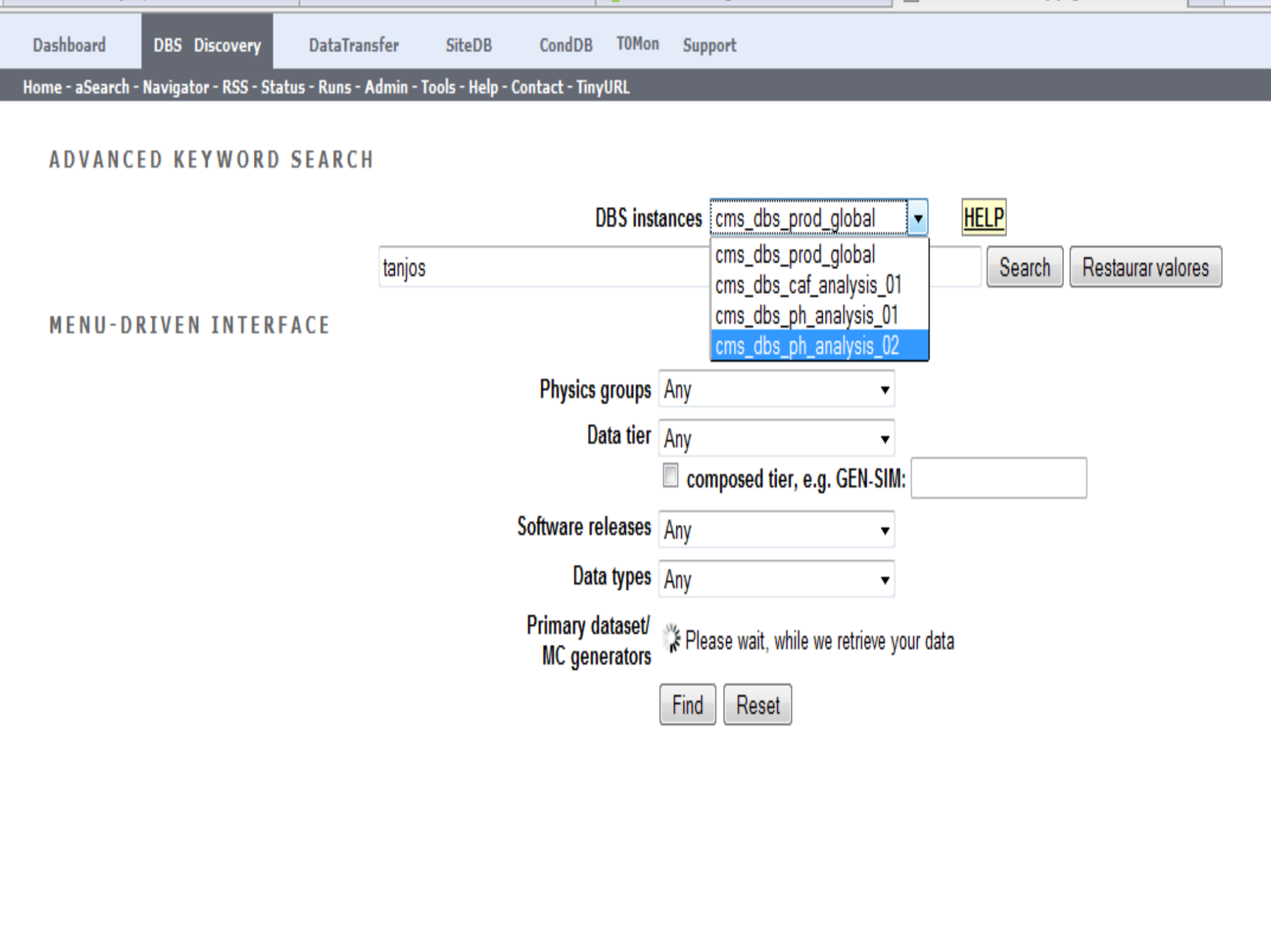
crab -getoutput -c <nomedoprojeto>

2. publicamos com o comando

crab -publish -c

para um projeto específico usamos

crab -publish -c <nomedoprojeto>


Dashboard
DBS Discovery
DataTransfer
SiteDB
CondDB
TOMon
Support
Home - aSearch - Navigator - RSS - Status - Runs - Admin - Tools - Help - Contact - TinyURL
ADVANCED KEYWORD SEARCH
DBS instances
cms_dbs_prod_global
HELP
tanjos
Search
Restaurar valores
cms_dbs_prod_global
cms_dbs_caf_analysis_01
cms_dbs_ph_analysis_01
cms_dbs_ph_analysis_02
MENU-DRIVEN INTERFACE
Physics groups
Any
Data tier
Any
composed tier, e.g. GEN-SIM:
Software releases
Any
Data types
Any
Primary dataset/
MC generators
Please wait, while we retrieve your data
Find
Reset

DBS instances cms_dbs_ph_analysis_02 HELP

find dataset where dataset like *tanjos* and dataset.status like VALID* Search Restaurar valores

DBS discovery :: Adv. search :: Results

Physicist

Found 8 results. Show all

View results: grid | list mode

Sort by desc | asc

/UED_Pythia6_7TeV_1_R_300_SSDiEMu/tanjos-Fast_UED_Pythia6_7TeV_1_R_300_SSDiEMu-f88f0b5eff8a1921897982f3dc56ab8a/USER
Created 01 Oct 2010 14:16:46 GMT, contains 66989 events, 30 files, 1 block(s), 7.3GB, located at 1 site (show, hide), LFNs: cff, py, plain , ∫L=N/A
Release info , Block info , Run info , Conf. files , Parents , Children , Description , PhEDEx , Create ADS , ADS , crab.cfg

/UED_Pythia6_7TeV_1_R_300_SSDiEMu/tanjos-UED_Pythia6_7TeV_1_R_300_SSDiEMu-fb5854382e2eb2f229c51215dce122f7/USER
Created 28 Sep 2010 13:10:23 GMT, contains 69298 events, 30 files, 1 block(s), 2.0GB, located at 1 site (show, hide), LFNs: cff, py, plain , ∫L=N/A
Release info , Block info , Run info , Conf. files , Parents , Children , Description , PhEDEx , Create ADS , ADS , crab.cfg

/UED_Pythia6_7TeV_1_R_500_SSDiEMu/tanjos-Fast_UED_Pythia6_7TeV_1_R_500_SSDiEMu-f88f0b5eff8a1921897982f3dc56ab8a/USER
Created 01 Oct 2010 15:02:12 GMT, contains 73869 events, 30 files, 1 block(s), 8.1GB, located at 1 site (show, hide), LFNs: cff, py, plain , ∫L=N/A
Release info , Block info , Run info , Conf. files , Parents , Children , Description , PhEDEx , Create ADS , ADS , crab.cfg

/UED_Pythia6_7TeV_1_R_500_SSDiEMu/tanjos-UED_Pythia6_7TeV_1_R_500_SSDiEMu-6c6c0ef8827fb44fd4971e30c8100ac9/USER
Created 27 Sep 2010 14:16:58 GMT, contains 76416 events, 30 files, 1 block(s), 2.1GB, located at 1 site (show, hide), LFNs: cff, py, plain , ∫L=N/A
Release info , Block info , Run info , Conf. files , Parents , Children , Description , PhEDEx , Create ADS , ADS , crab.cfg

/UED_Pythia6_7TeV_1_R_700_SSDiEMu/tanjos-Fast_UED_Pythia6_7TeV_1_R_700_SSDiEMu-f88f0b5eff8a1921897982f3dc56ab8a/USER
Created 02 Oct 2010 02:32:09 GMT, contains 82555 events, 31 files, 1 block(s), 8.8GB, located at 1 site (show, hide), LFNs: cff, py, plain , ∫L=N/A
Release info , Block info , Run info , Conf. files , Parents , Children , Description , PhEDEx , Create ADS , ADS , crab.cfg

/UED_Pythia6_7TeV_1_R_700_SSDiEMu/tanjos-UED_Pythia6_7TeV_1_R_700_SSDiEMu-f96fe6b4d7cd387b40fb89345a1844b2/USER
Created 01 Oct 2010 13:24:21 GMT, contains 82555 events, 30 files, 1 block(s), 2.2GB, located at 1 site (show, hide), LFNs: cff, py, plain , ∫L=N/A
Release info , Block info , Run info , Conf. files , Parents , Children , Description , PhEDEx , Create ADS , ADS , crab.cfg

/UED_Pythia6_7TeV_1_R_900_SSDiEMu/tanjos-Fast_UED_Pythia6_7TeV_1_R_900_SSDiEMu-f88f0b5eff8a1921897982f3dc56ab8a/USER
Created 01 Oct 2010 14:12:19 GMT, contains 73466 events, 26 files, 1 block(s), 7.7GB, located at 1 site (show, hide), LFNs: cff, py, plain , ∫L=N/A
Release info , Block info , Run info , Conf. files , Parents , Children , Description , PhEDEx , Create ADS , ADS , crab.cfg

/UED_Pythia6_7TeV_1_R_900_SSDiEMu/tanjos-UED_Pythia6_7TeV_1_R_900_SSDiEMu-cbe2a310c5279ef130162683a7443a44/USER
Created 27 Sep 2010 14:50:08 GMT, contains 88156 events, 30 files, 1 block(s), 2.2GB, located at 1 site (show, hide), LFNs: cff, py, plain , ∫L=N/A
Release info , Block info , Run info , Conf. files , Parents , Children , Description , PhEDEx , Create ADS , ADS , crab.cfg

Number of results per page 10

Result page: 1

Conclusão

- A produção de eventos de FastSimulation para UED está de acordo com os procedimentos do CMS
- Todos os eventos produzidos estão disponíveis para a colaboração no *cms_dbs_ph_analysis_02*
- Próximo passo: Desenvolvimento dos algoritmos de seleção
- Estudaremos os canais: ss dimúon (César), ss elétron/múon (Tiago)