

Integration of LCG MCDB with CMSSW

*L. Dudko, SINP MSU, Moscow
on behalf of LCG MCDB group*

<http://mcdb.cern.ch>

OUTLINE:

- Knowledge Base and API
- Dedicated Software
- Realization and Plans

LCG MCDB group:

S. Belov, JINR

L. Dudko, SINP MSU

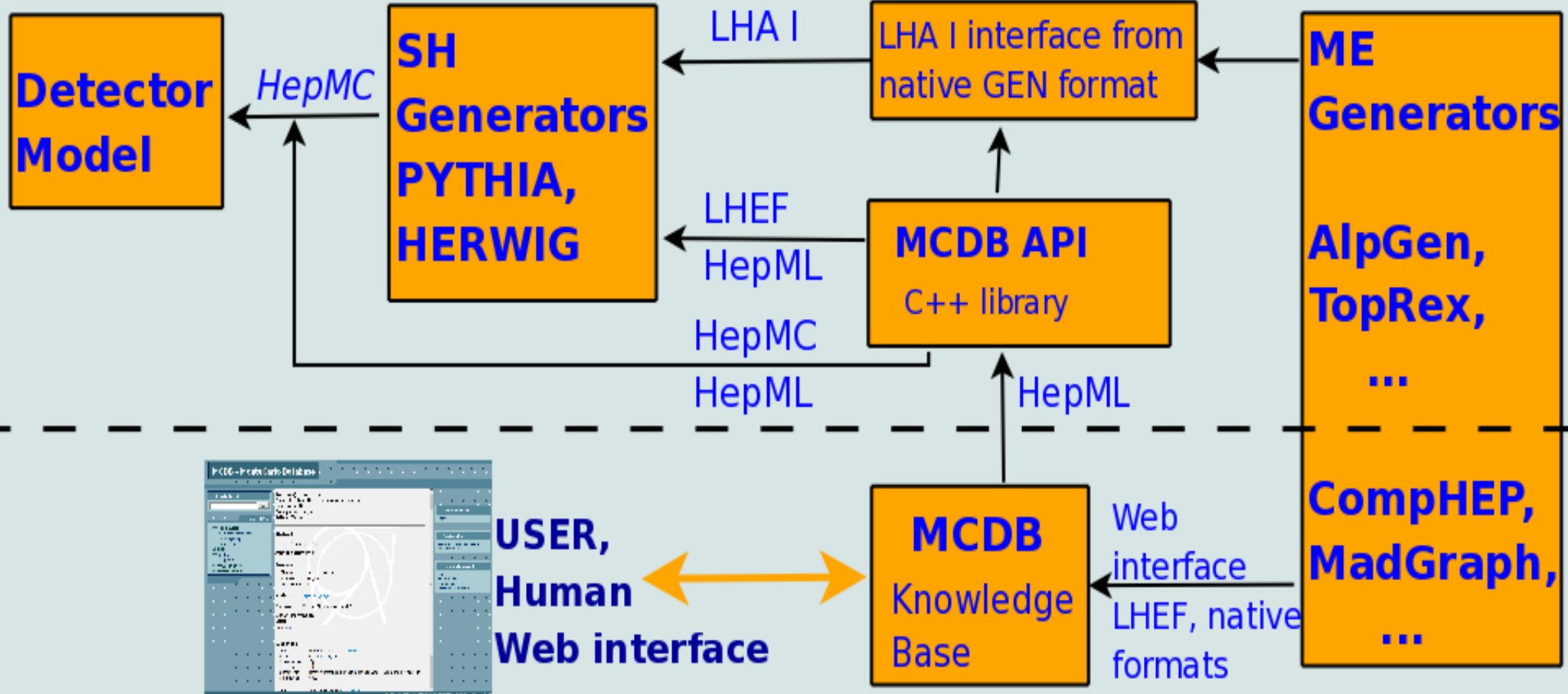
W. Pokorski, CERN

A. Sherstnev, Univ. of

Cambridge

What is MCDB in the Simulation Chain

CMSSW Simulation Chain

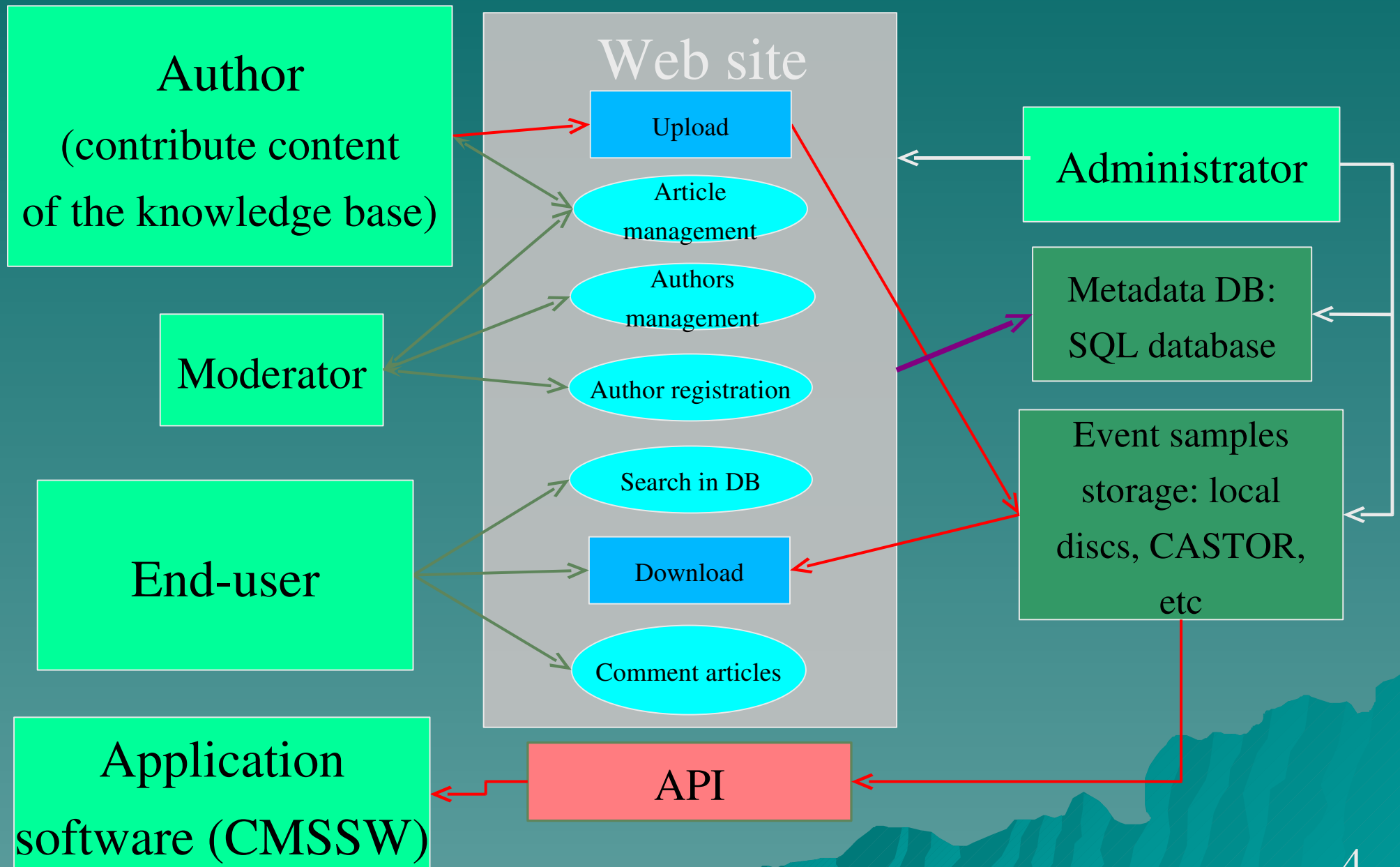


Overview of the Knowledge Base

– The Major Tasks of LCG MCDB

- Share sophisticated MC generated samples between different groups
 - Samples prepared by experts in MC event generation
 - Resource-intensive samples (Human or/and CPU resources)
- Provide infrastructure to keep MC samples and sample documentation
- Facilitate communication between MC experts and users in LHC collaborations

LCG MCDBB Scheme



The Major Features of LCG MCDB (I)

- ◆ Powerful WEB interface with Content Management System for the authors of event samples and end-users
- ◆ Tree graph of physics categories with articles published in MCDB to browse the database content
- ◆ Power search engine based on SQL/XML to search the content of the knowledge base
- ◆ Flexible and reliable authorization system based on CERN AFS/Kerberos logins or LCG GRID certificates
- ◆ SQL structure of event sample documentation
- ◆ BackUp of samples and SQL information

The Major Features of LCG MCDB (II)

- ◆ CASTOR is the native storage for the event samples
- ◆ Direct uploading of multiple files from AFS/CASTOR/GRID (wild-card characters are possible) to LCG MCDB
- ◆ Direct downloading of files from LCG MCDB with HTTP/CASTOR/GRID (URI)
- ◆ Application Programming Interface (API) for the LHC collaborations environment software
- ◆ LHEF/HepML unification of event file format

PARAMETERS OF EVENT SAMPLE DESCRIPTION

MCDB XML Scheme inside HepML specifications

◆ General information

- Title
- Abstract
- Authors
- Experiment and/or Group

◆ Physics process

- Initial state
- Final state
- QCD scale
- Process PDF

◆ Event files

- Physics process/subprocesses
- File name
- Events number
- cross section and uncertainty

◆ Used generator

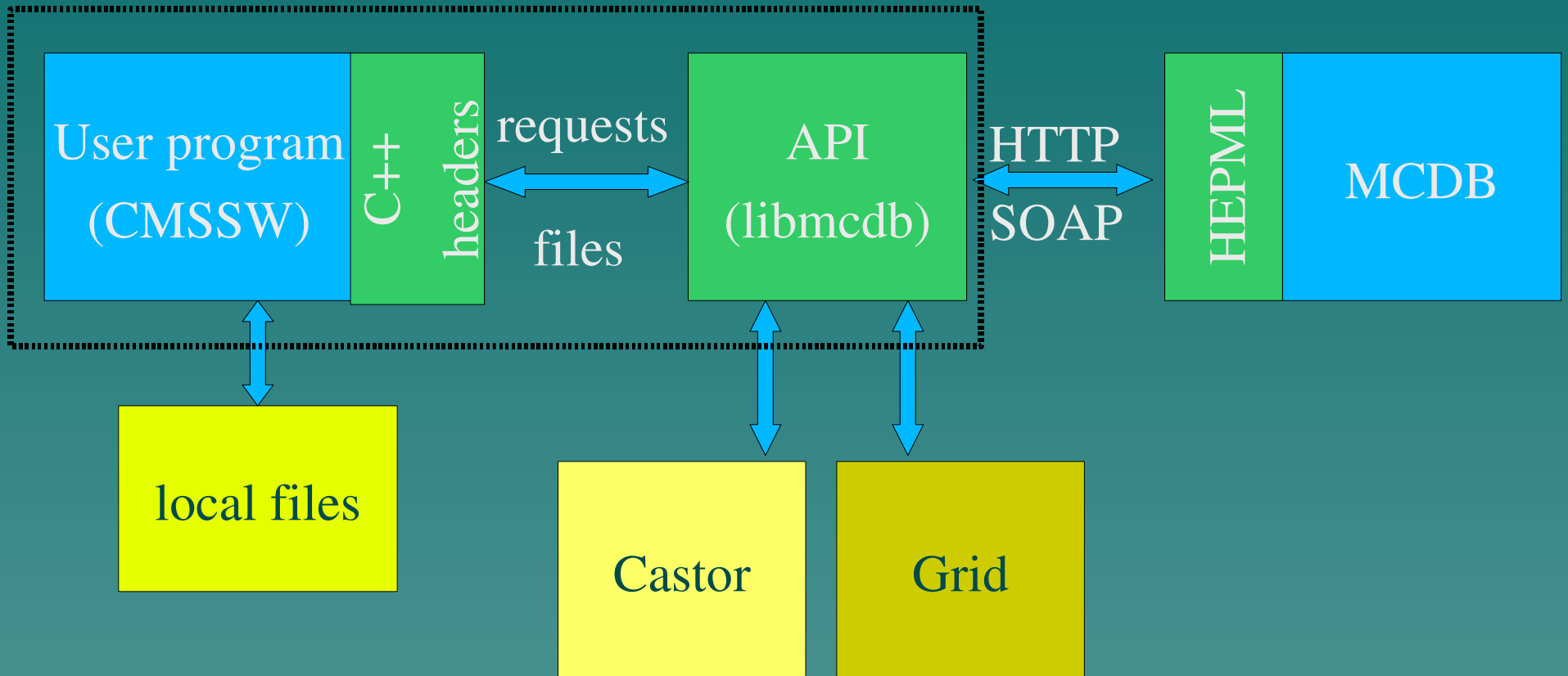
- Name and version
- Description
- Home page address

◆ Theoretical model

- Name
- Description
- Set of parameters and their values with author's descriptions

◆ Applied cuts

MCDB API structure



STEP I: MCDB => API

- ◆ HTTP request with ArticleID from API to MCDB server
(e.g. <http://mcdb.cern.ch/cgi-bin/xmlquery.cgi?article=116>)
- ◆ HepML description and paths to samples, as an answer from MCDB to API
- ◆ API parses the HepML (XML) block and fill C++ classes with the description
- ◆ API make local copy of the event sample, download the remote sample via SEAL (RFIO, GridFTP, HTTP, ...)

STEP II: API => CMSSW

- ◆ API provides:
 - local path to file with input events
 - Sample Description in the form of C++ objects
- ◆ CMSSW process the local event file to the next level of simulation
- ◆ CMSSW passes the C++ objects with event description to the output files

MCDB API C++ Classes

<http://mcdb.cern.ch/doc/API/public/mcdb.hpp>

```
namespace mcdb
{
class Article;
class File;
class Author;
class Cut;
class Generator;
class Model;
class Process;
class Subprocess;
}
```

```
class Generator{
public:
    Generator();
    ~Generator();
    string& name();
    string& name(const string&);
    string& version();
    string& version(const string&);
    string& homepage();
    string& homepage(const string&);
private:
    string name_;
    string version_;
    string homepage_;
};

class Process{
public:
    Process();
    ~Process();
    string& initialState();
    string& initialState(const string&);
    string& finalState();
    string& finalState(const string&);
    string& factScale();
    string& factScale(const string&);
    string& renormScale();
    string& renormScale(const string&);
    string& pdf();
    string& pdf(const string&);
private:
```

```
class Model{
public:
    Model();
    ~Model();
    class ModelParameter;
    string& name();
    string& name(const string&);
    string& description();
    string& description(const string&);
    vector<ModelParameter>&
parameters();
    vector<ModelParameter>&
parameters(const
vector<ModelParameter>&);
    class ModelParameter
    {
    public:
        ModelParameter();
        ~ModelParameter();
        string& name();
        string& name(const string&);
        string& value();
        string& value(const string&);
    private:
        string name_;
        string value_;
    };
private:
    string name_;
    string description_;
    vector<ModelParameter> parameters_;
};
```

How it works in reality

Stable versions of CMSSW

Subroutine in MadGraph and CompHEP interfaces:

CMSSW_1_6_5/src/GeneratorInterface/MadGraphInterface/src/MCDBInterface.cc

testMCDBInterface.cfg:

```
untracked bool  getInputFromMCDB = true
int32         MCDBArticleID = 113
string MadGraphInputFile = "rfio://castor/cern.ch/user/d/doudko/run_1_unweighted_events.lhe"
```

Only download the sample locally, does not parse sample description

Development version of CMSSW

Library with MCDB API code in:

CMSSW/src/GeneratorInterface/MCDBInterface/

part of CMSSW config file is almost the same

Inside any other interface add:

```
mcdb::MCDB mcdb;
mcdb::Article a = mcdb.getArticle(MCDBArticleID);
```

Automatically process and document in CMSSW the sample from MCDB

Fully Automatic Way to Document the sample.

New Developments from HepML.

- ◆ ME Generator link libHepML
- ◆ ME Generator call libHepML functions to fill the description of the events
- ◆ libHepML forms HepML header with sample description inside LHEF header (works in C++, C, Fortran)
- ◆ libHepML provides methods to parse HepML description and create C++ objects (MCDB API) or describe the sample in MCDB (SOAP)
- ◆ The first realisation of LHEF/HepML is available in CompHEP 4.5

HepML in LHEF

- ◆ J. Alwall et al., A standard format for Les Houches Event Files (2006) [[hep-ph/0609017](https://arxiv.org/abs/hep-ph/0609017)]

▣ structure:

```
<LesHouchesEvents version="1.0">
  <header>
    <hepml>
      <!-- HepML sample description here -->
    </hepml>
  </header>
  <init> ... </init>
  <event> ... </event>
  <event> ... </event>
  .....
</LesHouchesEvents>
```

C Functions from libHepML

```
void * init_lhaef_document (void);  
int set_general_description(void * doc, lhaef_general_description * sample);  
int set_file_description(void * doc, lhaef_file * file);  
int set_generator(void * doc, lhaef_generator * gen);  
int set_model(void * doc, lhaef_model * model);  
int add_model_parameter(void * doc, lhaef_parameter * par);  
int set_cutset(void * doc, int cutsetnumber);  
int add_cut(void * doc, lhaef_cut * cut);  
int set_author_record(void * doc);  
int add_author(void * doc, lhaef_author * author);  
int create_process(void * doc, lhaef_process * proc);  
int add_process_beam(void * doc, int i, lhaef_beam * beam);  
int add_process_beam_pdf(void * doc, int i, lhaef_pdf * pdf);  
int add_process_beam_pdf_alphas(void * doc, lhaef_alphas * alphas);  
int add_process_alphas(void * doc, lhaef_alphas * alphas);  
int add_subprocess(void * doc, lhaef_subprocess * subproc, int cutsetnumber);  
char * form_hepml_document(void * doc);
```

Plans of LCG MCDB Team

- ◆ Implement MCDB API in CMSSW (automatic processing and documentation of the samples from MCDB)
- ◆ If it will be requested, implement Fully automatic chain of sample documentation (from ME Generator to CMSSW, based on LHEF/HepML)
- ◆ Implement items from MCDB-TODO (long list of necessary changes described in MCDB TWiki)
- ◆ Finish documentation on MCDB-CMSSW
- ◆ Publish MCDB software as an Open Source project in HepFourge

MCDB Software

- ◆ Stable versions of MCDB server and MCDB API are available in the download section: <http://mcdb.cern.ch/distribution>
- ◆ Development versions are in MCDB CVS:
<simu.cvs.cern.ch:/cvs/simu/GENSER/MCDB>
<http://simu.cvs.cern.ch/cgi-bin/simu.cgi/simu/GENSER/MCDB/>

Conclusion

- ◆ LCG MCDB Knowledge Base is stable
 - MC experts are kindly inviting to share the knowledge by means of LCG MCDB
- ◆ LCG MCDB API provides automatic processing of MCDB samples and documentation in the Collaborations
- ◆ Complete implementation of MCDB API in CMSSW is in progress
- ◆ LHEF/HepML libraries/utilities/interfaces could be developed in collaboration with other groups

BACKUP SLIDES

History: CMS MCDB

- <http://cmsdoc.cern.ch/cms/generators/mcdb/>
- Operates in CMS during the last four years, widely uses by the Higgs group
- Only parton level files; AFS storage; Only phonetic search; No SQL

The screenshot shows a web browser window titled "LCG Monte-Carlo Events DataBase - Mozilla". The page content includes:

- Header:** "Monte-Carlo Events Data Base" with CERN and CMS logos.
- Left Navigation Menu:** HIGGS, TOP, W and n jets, Z and n jets, Gamma and n jets, WW and n jets, ZZ and n jets, WZ and n jets, Gamma Gamma n jets, W Gamma n jets, Z Gamma n jets, QCD multijets, REQUESTS, PROGRAMS, FAQ.
- Main Content Area:** A list of event samples with details:
 - QCD 2TAU+3J EVENTS WITH ALPGEN2. CAN BE USED FOR MLM ME+PS**: QCD 2tau+3j events generated with ALPGEN2 by Maiko Takahashi. Can be used for MLM ME+PS procedure, since generated with ickw=1. published: 06/06/2005 | author: Alexandre Nikitenko | category: Z and n jets
 - QCD 2TAU+2J EVENTS WITH ALPGEN2. CAN BE USED FOR MLM ME+PS**: QCD 2tau+2j events generated with ALPGEN2 by Maiko Takahashi. Can be used for MLM ME+PS procedure, since generated with ickw=1. published: 06/06/2005 | author: Alexandre Nikitenko | category: Z Gamma n jets
 - LO gg->W*W*->2L EVENTS, L=E, MU, TAU**: LO gg->W*W*->2l events provided by Nkolaz Kauer for gg->H->WW*->2l study during Les Houches 2005 Workshop. The information about generator can be found on Higgs group page. published: 19/05/2005 | author: Alexandre Nikitenko | category: WW and n jets
 - PHOTON + 3 JETS, QCD DIAGRAMS, COMPLETE TREE LEVEL SETS, COMPHEP, 850K EVENTS**: QCD fake background to the light Higgs signal in the W,Z fusion (gamma gamma + 2 jets channel). 850K event sample generated by CompHEP 4.2p1. published: 25/04/2005 | author: Mikhail Dubinin | category: Gamma and n jets
 - PP->tt* + GAMMA GAMMA, T1(2)->Wb->QQb, T2(1)->Wb->B L NU (L=E,MU,TAU) GENERATED BY MADGRAPH II**: pp->tt* + gamma gamma, t1(2)->Wb->qqb, t2(1)->Wb->b l nu (l=e,mu,tau) generated by Susanne Gascon with MadGraph II; gammas from ISR and FSR from top quarks. published: 25/03/2005 | author: Alexandre Nikitenko | category: TOP
 - EW TAUTAU+JJ WITH MADGRAPH. VBF AND MTAUTAU PRESELECTIONS WERE APPLIED**
- Right Side Panel:** "PUBLISH NEW DOCUMENT:" with options for "non authorized author", "authorized author", and "administrators area". A "HELP" link is also present.
- Footer:** "SEARCH THIS SITE" with a search input field and a "search" button.

Documentation

- ◆ **Main Web Page** <http://mcdb.cern.ch>
 - ◆ Description of the project
 - ◆ Users and Authors HOW-TOs
 - ◆ Developers documentation
- ◆ **Wiki** <https://twiki.cern.ch/twiki/bin/view/LCG/LCGMCDB>
- ◆ [\[hep-ph/0404241\]](#) LCG MCDB proposal
- ◆ [\[hep-ph/0604120\]](#) LCG MCDB report (p.200–204)
- ◆ [\[hep-ph/0703287\]](#) LCG MCDB description
- ◆ **Core software supported by LCG Software Project Infrastructure** (MySQL; CASTOR; CGI; Perl; Apache)
- ◆ **Mailing lists – USERS:** lcg-mcdb-users@cern.ch
Developers: project-lcg-mcdb@cern.ch

LCG MCDB Software

- ◆ LCG MCDB team has developed new Content Management System (CMS):
 - It allows to Store and document large files
 - It has Flexible authorization and authors management system (Kerberos, GRID)
 - Powerful search engine
 - Template system to enter documentation
 - Operates with MySQL
 - Different storage systems are possible
 - It is Open Source CMS (available from CVS)

External Interfaces

- ◆ API for the collaboration software to access samples and their description automatically (see S.Belov talk)
 - HepML output from MCDB
 - C++ classes and libraries to parse HepML and create corresponding C++ objects
- ◆ API to upload HepML/LHEF event sample automatically (in our plans)
 - Parse HepML header of LHEF sample
 - Create corresponding documentation in LCG MCDB automatically

LHEF/HepML Library

- ◆ Library to parse native event file format of most popular ME generators and convert it to LHEF/HepML format
 - Provides possibility to convert old events and their description to unified format by means of standalone utilities based on this library
 - Provides standard API for the authors of MC generators to keep events and their documentation in LHEF/HepML form during event generation (call of external subroutines inside the code)

LCG MCDB HepML Summary

- ◆ Concentrate efforts on passing the information from ME to SH generators as a part of LHEF HepML header
- ◆ XML schemas as a part of HepML specifications
- ◆ API C++ library and parser of LHEF/HepML
- ◆ Library and utilities to convert native generator format to LHEF/HepML or provide API to write LHEF/HepML directly from the generators
 - Can expect external support (GENSER, CMS, ...)

Terminology

- ▣ **Article** – a document describing a set of event samples. This document is the main unit of the content of MCDB
- ▣ **Category** – a branch of articles and physics models concerned a particular type of physical processes.
- ▣ **Author** – an expert in Monte–Carlo generators. (S)he can upload new event samples to MCDB and describe them in corresponding articles
- ▣ **User** – anybody who interests in new MC samples and agree with MCDB users license

WEB Interface

◆ Users Area:

- Browse physics categories and articles with complete documentation on the available samples
- Search the MCDB with complex query
- Download available MC samples
- Post comments to the articles and check the previous discussions on the particular article/sample

WEB Interface

- ◆ Authors Area:
 - Upload new event sample(s)
 - Document the event sample(s) in new article with help of templates system (pre-entered information)
 - Publish new article in the Users Area
 - Edit his/her previous articles or do the article publicly inaccessible for a while
 - Answer users comments/questions to his/her articles

LCG MCDB Subsystems

◆ SQL DB (MySQL)

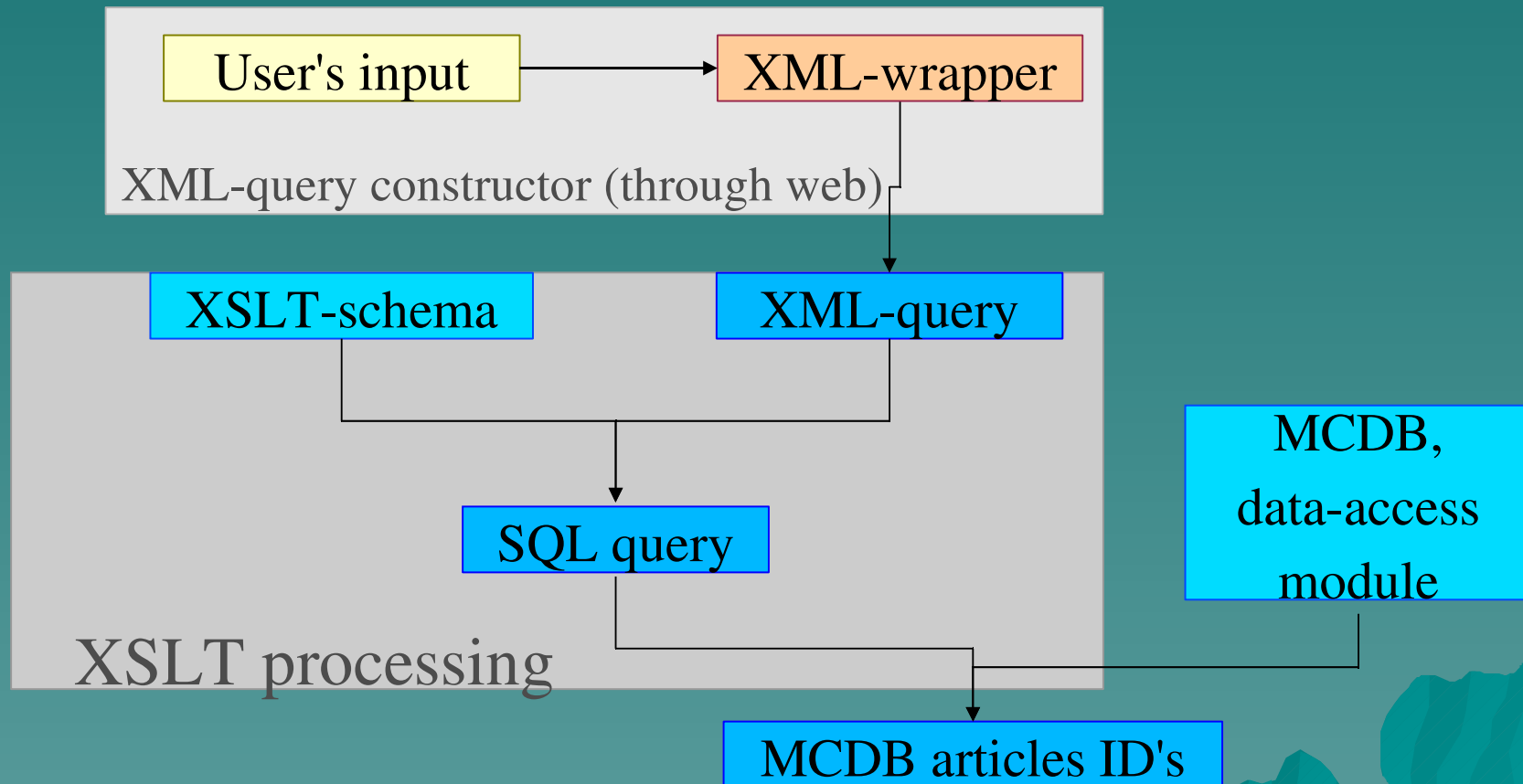
- Provides the possibility to keep information in a very structured way
- Facilitate authors to keep complete set of information for the new MC sample
- Provides the possibility for the external interfaces to search information in MCDB
- Direct connection between sample and its description (documentation)

LCG MCDB Subsystems

- ◆ CASTOR as a native storage for the samples
 - Native storage for the LHC Collaborations
 - Direct access to files is possible (not via WEB)
 - GridFTP access
- ◆ Authors authentication system
 - CERN AFS/Kerberos authorization (SSL secure)
 - LCG GRID certificates

MCDB Search Engine

- *dynamic* query construction wizard (JavaScript/XML/SQL)
- Search by many possible criteria with complicated relations between DB -objects



LCG MCDB Subsystems

- ◆ XML format of article (part of HepML)
- ◆ API to collaboration software
 - Set of C/C++/FORTRAN routines in collaboration environment for the direct access to the MCDB samples during the MC production. Based on HepML and direct URL to files
- ◆ HepML, unified XML format of MC events **Main stiff point of present development.**
 - Do possible an automatic interface to read, document MC samples and use it in the standard way in the collaboration software

Login to the authors area

Search this site

Go

Advanced search

Main MENU

Top physics

- Exotic production
- Single top
- QCD tt

QCD

- B physics
- multijets
- Software
- Requests
- Higgs physics
- Gauge bosons
 - Gamma and jets
 - 2gamma and jets
 - W and jets
 - WW and jets
 - Z and jets
 - ZZ and jets

FEEDBACK COMMENTS

Edit Delete

Please, provide your feedback comments on the LCG MCDB project, here

published: 16th May 2005, 13:40 | author(s): Lev Doudko

PROCESS PP->H->ZZ->4MU

Edit Delete

The event sample simulates the inclusive Higgs production with decay to four muons (viz Z-bosons). It is created by the CompHEP Monte-Carlo generator. The Higgs mass value is 500 GeV. All used physics parameters and applied cuts can be found in a prt file stored in the article.

published: 19th Sep 2005, 09:42 | author(s): Alexander Sherstnev

W+ AND 3 JETS

Edit Delete

These events were prepared by CompHEP in a special hash-model, where 2 first quark generations are unified to one of hash-quarks. See details in the article itself.

published: 29th Sep 2005, 14:51 | author(s): Alexander Sherstnev

QCD Z(2TAU)+3J EVENTS WITH ALPGEN2

Edit Delete

Events for the Z+3jets production. Z-boson decays to tau lepton pair. The events were prepared with ALPGEN Monte-Carlo generator. They can be used for the MLM ME-PS matching procedure, since generated with ickkw=1. All generation parameters and cuts applied can be viewed in the qcd_2tau3j_unw.par parameter file.

published: 18th Oct 2005, 12:20 | author(s): Alexander Nikitenko

Login to MCDB

Login

Registration

Register as MCDB author
Moderators list

Help and support

Help
About MCDB
Contact us

New author registration

Articles
abstracts

Categories

Advanced Search Query

Searching for Article, define conditions Experiment Show Info [FS] / [M]

+ Article X

Key words Z
any

Novelty last month

Inverse apply

Author X

Key words
any

Inverse do not use

+ Experiment X

Inverse do not use

Submit Query

PROCESS PP->H->ZZ->4MU Edit Delete

The event sample simulates the inclusive Higgs production with decay to four muons (viz Z-bosons). It is created by the CompHEP Monte-Carlo generator. The Higgs mass value is 500 GeV. All used physics parameters and applied cuts can be found in a prt file stored in the article.

published: 19th Sep 2005, 09:42 | author(s): Alexander Sherstnev ..

W+ AND 3 JETS Edit Delete

These events were prepared by CompHEP in a special hash-model, where 2 first quark generations are unified to one of hash-quarks. See details in the article itself.

Process pp->H->ZZ->4mu

Author(s): Alexander Sherstnev

Date of publication: 2005-09-19 09:42:37, **Last correction:** 2005-09-29 14:47:24

Categories: H and Z/W

Article ID: 34

Abstract:

The event sample simulates the inclusive Higgs to four muons (viz Z-bosons). It is created by generator. The Higgs mass value is 500 GeV, and applied cuts can be found in a prt file stor

Author comments:

Process:
p,p->H->mu+,mu-,mu+,mu-

Subprocess:
G,G->mu+,mu-,mu+,mu- (cross section = 0.6

Process:

Name: pp --> mu,mu,mu,mu
PDF set: CTEQ5L
QCD scale: sqrt(S)

Model: [SM, Feynman gauge](#)

Generator: CompHEP, **version:** 4.2.1

Other information:

Cuts:

5 GeV < Invariant_mass_1 < 400 GeV
3 GeV < $P_t(\mu)$
 $|\eta(\mu)| < 2.4$
5 GeV < Invariant_mass_2 < 400 GeV

Event files

File: events_MH500_wHCHep_BM1.pev
Size: 28200663 bytes
Cross section: 6.0382E-04pbn
Events number: 100000
Castor Path: waiting for migration (in a few hours)
Comments: Number of mixed reweighted events = 100000 (1 subprocess)

File: prt_MH500_wHCHep_Q2Shat ([download](#))
Size: 2682 bytes
Cross section:
Events number: 0
Castor Path: waiting for migration (in a few hours)
Comments: CompHEP kinematics module

MODEL:

SM, Feynman gauge

NAME: SM, Feynman gauge

DESCRIPTION:

PARAMETERS:

PARAMETER	VALUE	DESCRIPTION
m_s	0.117	
m_b	4.85	
GG	1.21358	
m_τ	1.77699	
S_W	0.48076	
M_{HIGGS}	115	
s_{12}	0.2229	
m_c	1.65	
M_{top}	174.3	
EE	0.31345	
s_{23}	0.0412	
m_μ	0.10566	
s_{13}	0.0036	
M_Z	91.1876	

Article

Download
events file

Comments

to the article

Theoretical model
and parameters

[View/post comments on article](#)
[Edit article](#)

Users Comments Interface

PROCESS PP->H->ZZ->4MU Edit Delete

The event sample simulates the inclusive Higgs production with decay to four muons (viz Z-bosons). It is created by the CompHEP Monte-Carlo generator. The Higgs mass value is 500 GeV. All used physics parameters and applied cuts can be found in a prt file stored in the article.

published: 2005-09-19 09:42:37 | author(s): Alexander Sherstnev

Comments:
[Moderate]

YOUR NAME:

E-MAIL:

COMMENTS:

Done

Documentation

Help on LCG Monte-Carlo Data Base

Full HOW-TO for MCDB authors

Brief HOW-TO for new authors of LCG MCDB

If you want to share your new MC sample with other groups, please do the following:

- Register as a new author at the "Register New Author" at the right side menu of the main LCG MCDB web page, then wait for the confirmation e-mail
- Login to the LCG MCDB authors area at the "Login" link at the right side menu
- Choose "Create New Article" at the new right side menu
- Fill the fields in the documentation templates, which will appear (title, generator, theoretical model, cuts, ...)
- Upload your event files in the "Event Files" slice
- Click "Preview/Save" slice and check the box "Publish"

Now, your new article and samples are

Notes: 1. You need valid CERN AFS log

[Main Page](#) | [Directories](#) | [File List](#) | [File Members](#) | [Search for](#)

cgi-bin

download.cgi File Reference

[Go to the source code of this file.](#)

Functions

```
use CGI qw (:standard-private_tempfiles-oldstyle_urls)
use Fcntl qw (:DEFAULT:flock)
use POSIX qw (setsid floor ceil WNOHANG)
use File::Basename qw (basename)
use MCDB::Common qw (:DEFAULT:CGI_SCRIPTS)
if ($download_start)
unless (defined $file)
unless ($cache_id)
if ($location eq 'file')
```

Variables

```
use strict
use constant BUFFER_SIZE => 131072
use constant REFRESH_TIME => 10
my $file = param 'file'
```

MCDB authors HOW-TO

[Register as MCDB author](#)

[Change registration details](#)

[Use LCG digital certificate](#)

[Obtain a certificate](#)

[Login to MCDB](#)

[Publish new article](#)

[Edit articles](#)

[Upload event files](#)

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[More details](#)

▲ Register as MCDB author

You can register as a new author following the link "[Register as MCDB author](#)" right side menu on the [main page](#) of LCG MCDB.

- Fill out the registration form. All fields are obligatory (and at least one of "AFS login" or "DN from LCG certificate" should be specified).
- Submit the form and wait for confirmation e-mail (in a few work days).

▲ Change registration details

New Authors HOW-TO

- (1) Register as a new author, wait for the confirmation e-mail
- (2) Login to the LCG MCDB authors area
- (3) Choose "Create New Article" in the authors menu
- (4) Fill the fields in the documentation templates, which will appear (title, generator, theoretical model, cuts, ...)
- (5) Upload your event files in the "Event Files" slice
- (6) Click "Preview/Save" slice and check the box "Publish"

Notes:

1. Author needs valid CERN AFS login or LCG digital certificate to be authorized;
2. Author can store unfinished articles and resume to correct them in any moment;
3. Author can edit articles already published on the Web or do the documents publicly inaccessible for a while.

- Form to send a request for the authorization as new LCG MCDB author.

- Necessary only if you want to upload new MC samples

MCDB registration

Please provide following information to register
All fields are required (and at least one of *)

First name:

Last name:

CERN AFS login: *

DN from LCG certificate: *

Experiment:

Group:

Organization:

E-mail:

* At least one of fields *Login* or *DN* **must** be filled.
To get DN you can examine you personal LCG certificate or load it to your browser (instructions [here](#))

Register Cancel

Done

After authorized login to MCDB the additional entries will appear at the right side menu, according to the author permissions

MCDB - MonteCarlo Database

Search this site
Go
Advanced search

Main MENU

- Top physics
- QCD
- Software
- Requests
- Higgs physics
- Gauge bosons

FEEDBACK COMMENTS Edit Delete

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W+ AND 3 JETS Edit Delete

Moderator entry

- User management
- Categories management
- View new comments

Author entry

- Create new article
- Edit articles

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0000230 times visited since October 2005

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Add/Edit Article link is the gate to the article template system

The screenshot displays the MCDB - Monte-Carlo DataBase web interface. The browser title bar shows "MCDB - Monte-Carlo DataBase" and "New window - Close window - Help". The interface has a top navigation bar with buttons for "Article creating", "New generator", "New process", "New model", and "New cut". Below this is a secondary navigation bar with buttons for "General information", "Event files", "Generator", "Model", "Process", "Cuts", and "Preview/save".

The main content area is titled "ARTICLE TITLE:" and contains a text input field with the value "Process pp->H->ZZ->4mu". Below this are three columns of form fields:

- CATEGORIES:** A list box containing "Gauge bosons", "2gamma and jets", "Gamma and jets", "W and jets", "WW and jets", "Z and jets", "ZZ and jets", "Higgs physics", "H and jets", "H and Z/W" (highlighted), "QCD", "B physics", "multijets", "Requests", and "Software".
- GROUP:** A dropdown menu showing "Higgs PRS group".
- EXPERIMENT:** A dropdown menu showing "CMS".
- OTHER GROUP:** An empty text input field.
- RESPONSIBLE PERSON:** An empty text input field.
- GROUP DESCRIPTION:** An empty text input field.
- PRIMARY AUTHOR:** A dropdown menu showing "Alexander Sherstnev, SINP MSU".
- CO-AUTHORS:** A list box containing "Alexander Nikitenko, Imperial College, University of London", "Alexander Sherstnev, SINP MSU", "Anton Gusev, IHEP", "Filip Moortgat 2770, CERN", "Filippo Ambrogini, University and INFN Perugia", "Harinder Singh Bawa, Panjab University Chandigarh", "Lucia Silvestris, INFN-Bari", "Mikhail Dubinin, SINP MSU", "Sergey Belov, JINR", and "Vladimir Uzhinsky, JINR, LIT".

At the bottom, the "ABSTRACT:" section contains a text input field with the following text: "The event sample simulates the inclusive Higgs production with decay to four muons (viz Z-bosons). It is created by the CompHEP Monte-Carlo generator. The Higgs mass value is 500 GeV. All used physics parameters".

Event files slice to manage event files attached to the article

MCDB - Monte-Carlo DataBase

Article creating | New generator | New process | New model | New cut

General information | Event files | Generator | Model | Process | Cuts | Preview/save

FILES MANAGEMENT: **LIST** :: **UPLOAD** :: **IMPORT**

:: **UPLOADED FILES:**

File	Size	Events	C-Section	CS-Errors	Edit
<input type="checkbox"/> kis_user.F	5192	0	0	0	Edit
<input type="checkbox"/> tq_tqb_tot.pev53461813	171373	27.66 pb	0.04		Edit
<input type="checkbox"/> prt_tq.tgz	6065	0	0	0	Edit

EVENTS NUMBER:

CROSS SECTION:

CROSS SECTION ERROR:

COMMENTS:

Set description

Wild-cards
are possible

MCDB - Monte-Carlo DataBase

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FILES MANAGEMENT: **LIST** :: **UPLOAD** :: **IMPORT**

:: **IMPORT FILE(S) FROM AFS OR CASTOR**

Show as list / table

Copy monitor

<input checked="" type="checkbox"/>	Perm	Items	Owner	Group	Size	Month	Day	Time	File
<input type="checkbox"/>	drwxr-xr-x	2	root	root	0	Oct	25	2004	grid
<input type="checkbox"/>	drwxr-xr-x	1	root	root	0	Dec	17	2005	castor
<input checked="" type="checkbox"/>	-rw-r--r--	1	root	root	0	Aug	13	2004	foo

MC generator and Physics Process description slices

MCDB - Monte-Carlo DataBase New window - Close window - Help

Article creating | **New generator** | New process | New model | New cut

General information | **Event files** | **Generator** | Model | Process | Cuts | Preview/save

GENERATOR: **VERSION:**

[Other generator/version](#)

DESCRIPTION:
Old version of CompHEP with old format of event files (compatible with interface implemented to CMKIN)

HOME PAGE:
<http://theory.sinp.msu.ru/comphep>

MCDB - Monte-Carlo DataBase New window - Close window - Help

Article creating | New generator | New process | New model | New cut

General information | Event files | **Generator** | Model | **Process** | Cuts | Preview/save

PROCESS:
PP -> MU,MU,MU,MU, PDF: CTEQ5L, QCD SCALE: SQRT(S)

[Describe new](#)

pp -> tT+2Jet, PDF: CTEQ6M, QCD scale: 175
ANY -> ANY, PDF: ANY, QCD scale: ANY
pp -> tau,tau,j,j,j, PDF: CTEQ5L, QCD scale: MZ2+pT,Z2
pp -> W,j,j,j, PDF: CTEQ5M1, QCD scale: MW
pp -> mu,mu,mu,mu, PDF: CTEQ5L, QCD scale: sqrt(S)
pp -> W+ and 3 jets, PDF: CTEQ5M1, QCD scale: M(W-boson)=79.958 GeV, Alpha_s(MZ) = 0.1185
pp -> mu,mu,j,j, PDF: CTEQ5L, QCD scale: 2*mz
pp -> tau,tau,j,j,j, PDF: CTEQ5L, QCD scale: MZ2+pT,Z2

--> PDF:

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MCDB - Monte-Carlo DataBase

Article creating | New generator | New process | New model | New cut

General information | Event files | Generator | Model | Process | Cuts | Preview

MODEL:

SM, Feynman gauge

NAME: SM, Feynman gauge

DESCRIPTION:

PARAMETERS:

PARAMETER	VALUE	DESCRIPTION
m_s	0.117	
m_b	4.85	
GG	1.21358	
m_t	1.77699	
S_W	0.48076	
M_{HIGGS}	115	
s_{12}	0.2229	
m_c	1.65	
M_{top}	174.3	
EE	0.31345	
s_{23}	0.0412	
m_μ	0.10566	
s_{13}	0.0036	
M_Z	91.1876	

Physics model
parameters
and applied cuts slices

MCDB - Monte-Carlo DataBase

Article creating | New generator | New process | New model | New cut

Create new set of cuts

MIN VALUE < OBJECT < MAX VALUE

Remove

Cut description OTHER: other object Include region Exclude region

HTML:

Add cut

Save Undo Reset

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