

LCG Monte-Carlo Events Data Base (LCG MCDB Project)

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on behalf of LCG MCDB group

Outline

- Project Overview
 - Authors Management and Authorisation
 - Articles Management
 - Status of other blocks
 - Documentation
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Overview

- **Motivations**
 - **To Provide Configuration, Book-keeping, Documentation, Storage for the Shared Monte-Carlo Event Files**
 - **To keep track of the full generation chain, Exploiting the Competences of Monte Carlo Experts and Monte Carlo Authors**
 - **CMS MCDB** [hep-ph/0403100] <http://cmsdoc.cern.ch/cms/generators/mcdb/>
 - **Only parton level files; AFS storage; No Searchable; No SQL**
 - **LCG MCDB** [hep-ph/0404241] <http://mcdb.cern.ch>
 - **Same authors + Additional human resources and technical support**
 - **Core software supported by LCG Software Project Infrastructure**
MySQL; POOL; CASTOR (RFIO); CGI; Perl; Apache
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The MCDB Project Structure

- Authors management and Authorisation block
 - Articles Management
 - Event Files management
 - Log system
 - Documentation
 - Users comments management
 - Search engine
 - Application Package Interface
 - Uniform Event Formats and Event Interfaces
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The SQL Structure and Access Policy

End-User

Read articles, comments, news
Download event files

Author

Post articles
Upload event files
Post news and answer the comments

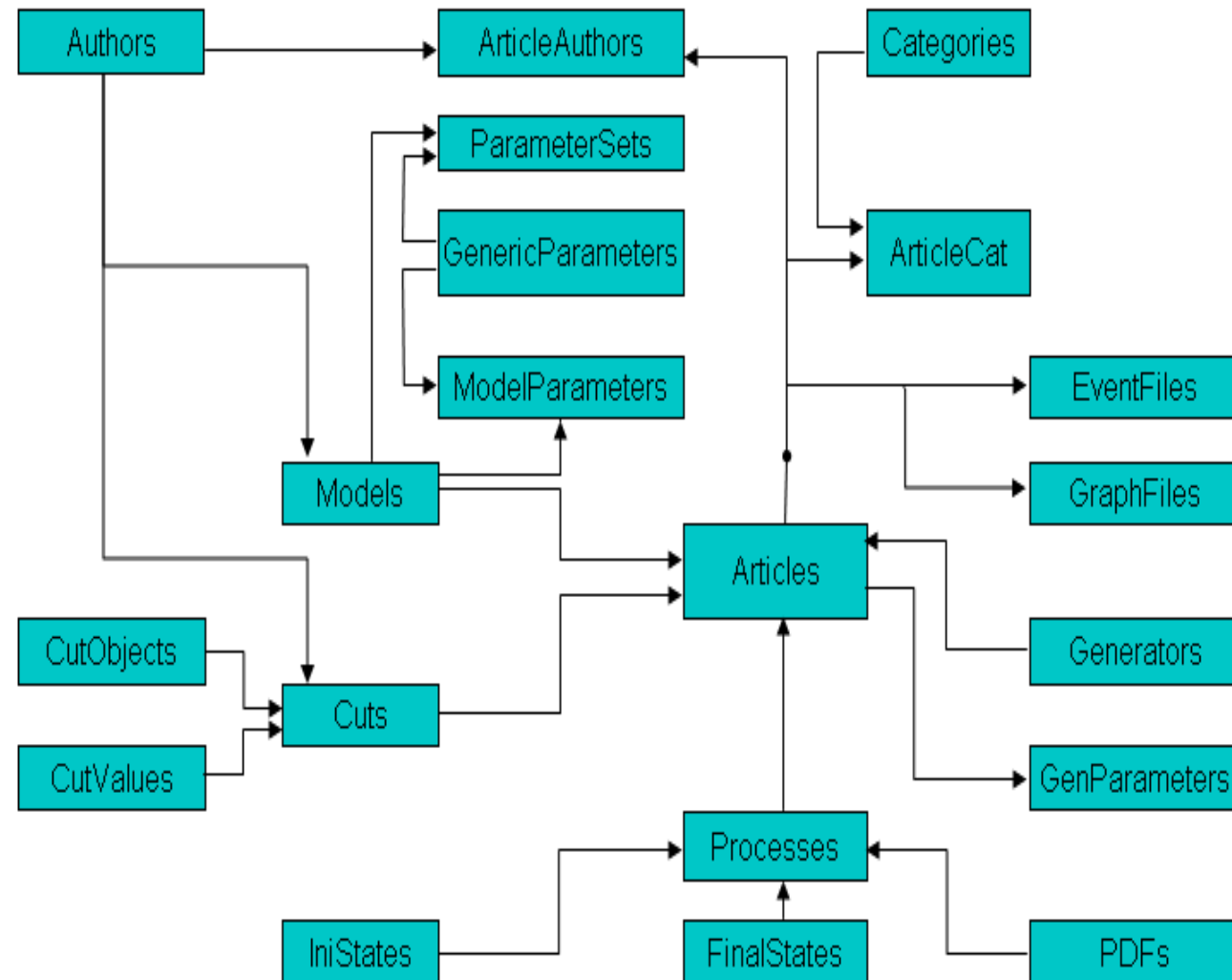
Moderator

Manage users profiles
Moderate articles and comments

Administrator

Control the system
Technical database management

SQL Table Structure

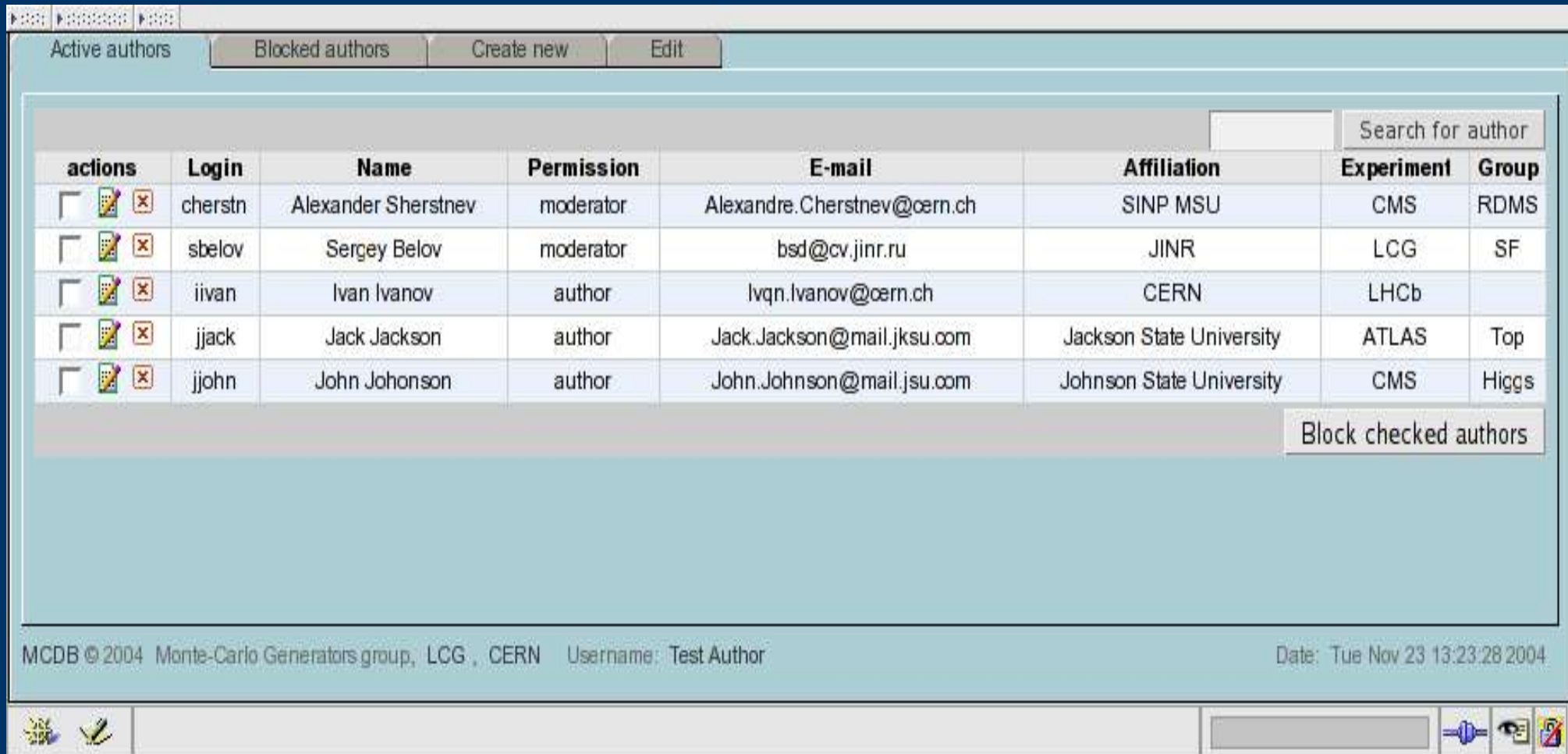


Authorisation System (95% done)

- Based on CERN AFS authorisation system
 - Do not need new passwords
 - Do not store passwords on the web server
 - Uses **mod_auth_external** Apache module
 - Checked at CMS MCDB
 - Do not need to compile external libs to Apache
 - The GRID authentication can be added easily
 - All of the connections required passwd are crypted with SSL/TLS
 - Not encrypted requests automatically redirect to SSL/TLS connection
 - Direct connection with MySQL authors management system
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Authors Management System (85% done)

- Web interface to add, remove, block and edit author records and policies



The screenshot displays a web interface for managing authors. At the top, there are tabs for "Active authors", "Blocked authors", "Create new", and "Edit". A search bar labeled "Search for author" is located in the top right. Below the search bar is a table with the following columns: actions, Login, Name, Permission, E-mail, Affiliation, Experiment, and Group. The table contains five rows of author data. At the bottom right of the table area, there is a button labeled "Block checked authors". The footer of the interface includes the text "MCDB © 2004 Monte-Carlo Generators group, LCG, CERN Username: Test Author" and "Date: Tue Nov 23 13:23:28 2004".

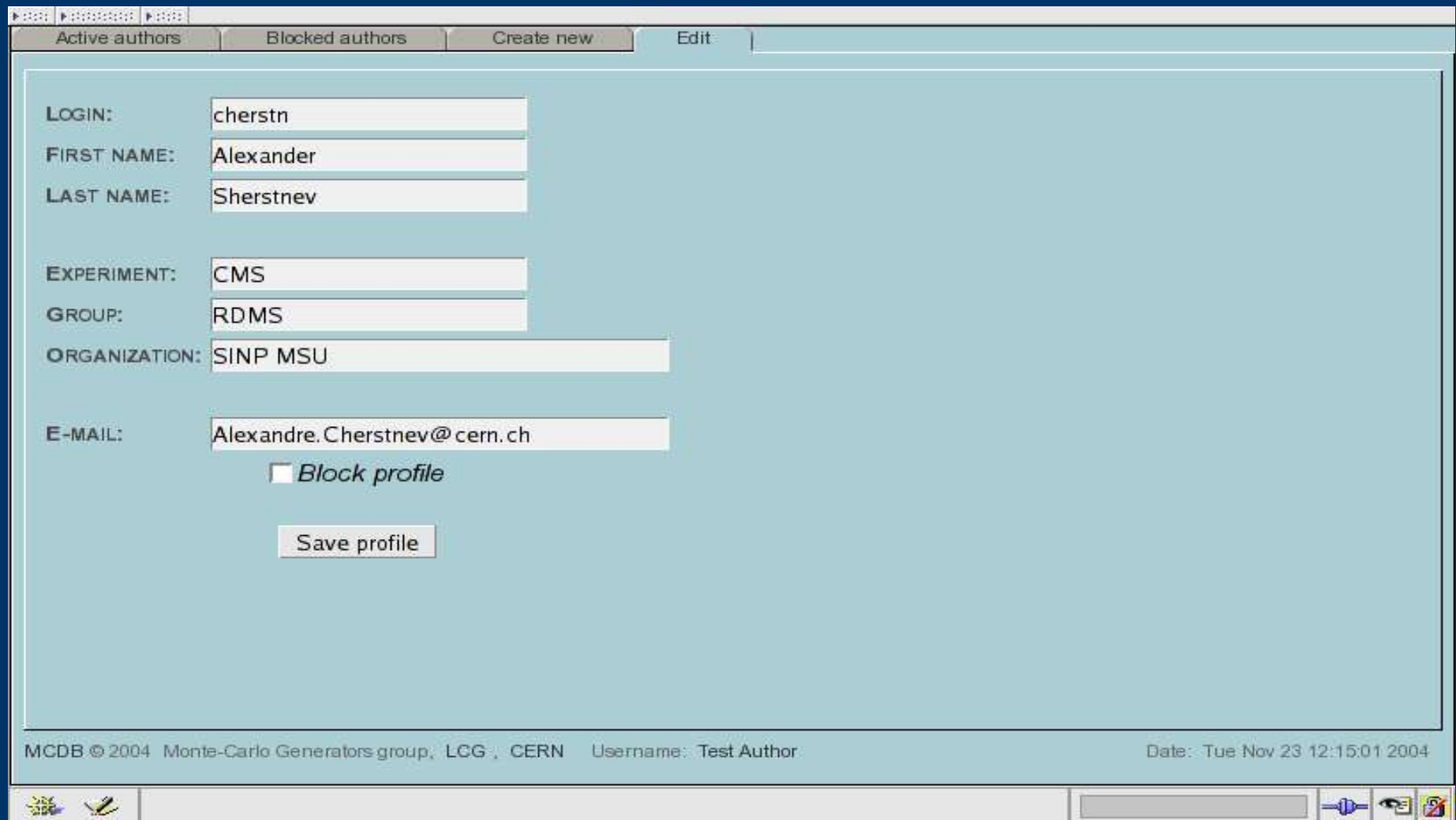
actions	Login	Name	Permission	E-mail	Affiliation	Experiment	Group
<input type="checkbox"/>	cherstn	Alexander Sherstnev	moderator	Alexandre.Cherstnev@cern.ch	SINP MSU	CMS	RDMS
<input type="checkbox"/>	sbelov	Sergey Belov	moderator	bsd@cv.jinr.ru	JINR	LCG	SF
<input type="checkbox"/>	iivan	Ivan Ivanov	author	lvqn.Ivanov@cern.ch	CERN	LHCb	
<input type="checkbox"/>	jjack	Jack Jackson	author	Jack.Jackson@mail.jksu.com	Jackson State University	ATLAS	Top
<input type="checkbox"/>	jjohn	John Johnson	author	John.Johnson@mail.jsu.com	Johnson State University	CMS	Higgs

Block checked authors

MCDB © 2004 Monte-Carlo Generators group, LCG, CERN Username: Test Author Date: Tue Nov 23 13:23:28 2004

Authors Management System

- Add new author or edit author records



The screenshot displays a web browser window with a navigation bar at the top containing tabs for "Active authors", "Blocked authors", "Create new", and "Edit". The main content area is a form for editing an author's profile. The form fields are as follows:

LOGIN:	cherstn
FIRST NAME:	Alexander
LAST NAME:	Sherstnev
EXPERIMENT:	CMS
GROUP:	RDMS
ORGANIZATION:	SINP MSU
E-MAIL:	Alexandre.Cherstnev@cern.ch

Below the form fields, there is a checkbox labeled "Block profile" which is currently unchecked. A "Save profile" button is located below the checkbox.

At the bottom of the browser window, the status bar shows: "MCDB © 2004 Monte-Carlo Generators group, LGG, CERN Username: Test Author Date: Tue Nov 23 12:15:01 2004".

Articles Management (80% done)

- Provide authors clear interface to document events as easy as possible
 - It is possible to use pre-entered information to describe generator, model, parameters, etc.
 - Present articles in a very structured way
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Articles Management, general structure

MCDB - Monte-Carlo DataBase New window - Log out - Help

Article creating | Generators | Describe process | Describe model | Describe cuts

General information | Event files | Generator | Model | Process | Cuts | Article preview/save

ARTICLE TITLE:

CATEGORIES: **GROUP:** **CO-AUTHORS:**

TOP
Single top
ttbar
Higgs
Wjets

OTHER GROUP:

EXPERIMENT:

RESPONSIBLE PERSON:

GROUP DESCRIPTION:

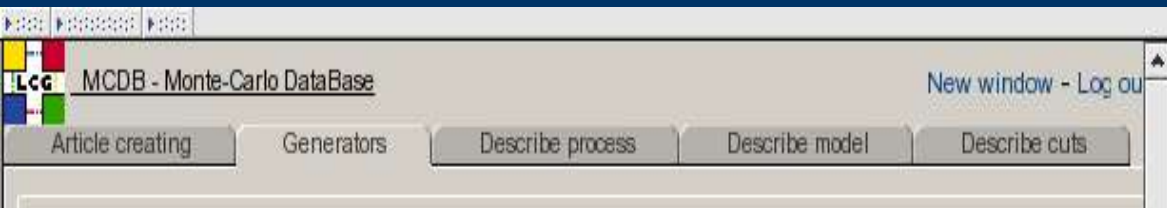
Test Author 4, IHEP
Ivan Ivanov, CERN
Jack Jackson, Jackson State University
John Johnson, Johnson State University

ABSTRACT:

AUTHOR COMMENTS:

MCDB © 2004 Monte-Carlo Generators group, LCG, CERN Username: Test Author Date: Tue Nov 23 13:30:50 2004

Articles Management, generator and Process description



GENERATOR:

VERSION:

OTHER:

DESCRIPTION:

GENERATOR HOME PAGE:

Save

MCDB - Monte-Carlo DataBase

Article creating Generators Describe process Describe model Describe cuts

Describe new Search

Describe new process

INITIAL STATE:

FINAL STATE:

OTHER INITIAL STATE:

OTHER FINAL STATE:

QCD SCALE:

PROCESS PDF:

PDF DESCRIPTION:

OTHER PDF:

Save Undo Reset

Articles Management, model and its parameters

MCDB - Monte-Carlo DataBase New window - Log

Article creating Generators Describe process Describe model Describe cuts

Describe new Parameters

Describe new model

BASE MODEL:
SM, Feynman gauge [Preview](#)

MODEL NAME:

MODEL DESCRIPTION:

PARAMETERS:
m_higgs =
[Other](#) [Description](#)

MCDB - Monte-Carlo DataBase New window - Log

Article creating Generators Describe process Describe model Describe cuts

Describe new Parameters

Import parameters from base model

[Back](#)

NAME: SM, Feynman gauge
DESCRIPTION:

PARAMETERS:

	PARAMETER	VALUE	DESCRIPTION
<input checked="" type="checkbox"/>	s ₁₃	0.0036	
<input checked="" type="checkbox"/>	EE	0.31345	
<input checked="" type="checkbox"/>	m _μ	0.10566	
<input checked="" type="checkbox"/>	GG	1.21358	
<input checked="" type="checkbox"/>	m _c	1.65	
<input checked="" type="checkbox"/>	M _{top}	174.3	
<input checked="" type="checkbox"/>	SW	0.48076	
<input checked="" type="checkbox"/>	s ₁₂	0.2229	
<input checked="" type="checkbox"/>	m _b	4.85	
<input checked="" type="checkbox"/>	s ₂₃	0.0412	
<input checked="" type="checkbox"/>	m _s	0.117	
<input checked="" type="checkbox"/>	M _{HIGGS}	115	
<input checked="" type="checkbox"/>	M _Z	91.1876	
<input checked="" type="checkbox"/>	m _T	1.77699	

[Back](#)

Articles Management, cuts description

LCG MCDB - Monte-Carlo DataBase New window - Log out

Article creating Generators Describe process Describe model Describe cuts

Create new set of cuts

<u>MIN VALUE</u>		<u>OBJECT</u>		<u>MAX VALUE</u>	
<input type="text"/>	<	Invariant mass(e-,e+)	<	<input type="text"/>	Remove
Cut description		OTHER: <input type="text" value="other object"/>		<input checked="" type="radio"/> Include region	<input type="radio"/> Exclude region
		HTML: <input type="text"/>			

MCDB © 2004 Monte-Carlo Generators group, LCG, CERN Username: Test Author Date: Wed Nov 24 13:37:1

Article representation in the user space

The screenshot displays the MCDB - MonteCarlo Database website. The page features a header with the site name and navigation links. A left sidebar contains a search bar and a main menu with categories like TOP, Single top, ttbar, Higgs, and Wjets. The main content area displays an article titled "my first article" with various metadata and technical details. A right sidebar contains another search bar and a list of user roles.

MCDB - MonteCarlo Database | top-level-menu | top-level-menu |

Some comments about this site can be here.

Search this site
Go!

Main MENU

- TOP
 - Single top
 - ttbar
 - Higgs
 - Wjets

my first article

Author(s): Sergey Belov
Date of publication: 2004-08-24 18:44:17
Last correction:
Categories: Single top, ttbar
Article ID: 1

Abstract:
Some abstract

Author comments:

Process: pp --> gamma jet jet jet

Model: Standard hash

Generator: CompHEP, **version:** 4.4.0

Other information:
Structure functions: CTEQ5L
QCD constant scale: 1.185000E-01

Model parameters:
 $G_f = 0.00006$
 $\alpha_s = 0.118$

Cuts:
no cuts

Event files

Search this site
Non authorized author entry
Authorized author entry
Administrator's area
Moderator entry
News

Search this site
Non authorized author
Authorized author
Administrator's area

Event Files Management (10% done)

- Realised uploading to disk (as in CMS MCDB)
- Need to add interface to CASTOR
- GRID and API interfaces (next year)

Log System (20% done)

- There are separate log files for different subsystems
 - Need to combine to uniform structure
 - Add structure to search engine
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Documentation

(follows to the project progress)

- The idea of the project and common structure are described already in hep-ph/0404241
 - Need technical documentation on the programs and interfaces for the (future) developers
 - There are different standards to document code
 - The first Doxygen version is ready
(<http://mcdb.cern.ch/doc/html/>)
 - It automatically provides outputs in html, latex, xml, etc.
 - Automatically document program functions, variables,...
 - Bad support for PERL syntax
-
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Doxygen documentation of MCDB

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

LCG Monte-Carlo Data Base

0.1

Abstract

We present the Monte-Carlo events Data Base (MCDB) project and its practical realization. MCDB facilitates communication between authors of Monte-Carlo generators and experimental users. It also provides a convenient book-keeping and an easy access to generator level samples. The first release of MCDB is now operational for the CMS collaboration. In this documentation we review the main ideas behind MCDB and how it is done in practice within the CERN LCG framework.

Introduction

One of the most general problems for the experimental high energy physics community is Monte-Carlo (MC) simulation of physics processes. There are numerous publicly available MC generators. However, the correct MC simulation of complicated processes requires in general rather sophisticated expertise on the user side. Often, a physics group in an experimental collaboration requests experts and/or authors of MC generators to create MC samples for a particular process. Furthermore, it is common that the same physics process is investigated by various physics groups needing the same MC event samples. The main motivation behind the Monte-Carlo Data Base (MCDB) project is to make MC event samples, as prepared by experts, available for various physics groups.

There are a number of useful aspects that motivate setting up a central MC Database.

Doxygen Documentation of MCDB

users.cgi File Reference

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

Functions

use CGI	qw	(:standard:cgi-lib-compile-nosticky-private_tempfiles-oldstyle_urls escapeHTML *table)
use CGI::Carp	qw	(fatalToBrowser)
use Date::Manip	qw	(UnixDate)
use MCDB::Common	qw	(:DEFAULT:CGI_SCRIPTS)
print	header	(-expires=>'now')
	if	(\$@)

Variables

use	strict
use	warnings
use	DBI
use vars qw \$self_url	\$search_conditions
my	menu_items
	exit

Function Documentation

```
print header ( - expires,  
              'now'  
              )
```

Referenced by `if()`.

```
if ( $@ )
```

Definition at line **42** of file **users.cgi**.

```
00042     {  
00043     &WLerr("Error: $@");  
00044 }
```

```
my menu_items
```

Initial value:

```
(  
  'active'   => { caption => 'Active authors', action => \&authors, title => 'Active authors list'},  
  'blocked' => { caption => 'Blocked authors', action => \&authors, title => 'Blocked authors list'},  
  'authorize' => { caption => 'Awaiting authorization', action=> \&authorize, title => 'Users awaiting authorization'},  
  'create_new' => { caption => 'Create new', action => \&create_new, title => "Create new author's profile"},  
  'edit'      => { caption => 'Edit', action => \&edit_author, title => "Edit author's profile" },  
  'mailing'  => { caption => 'Mail to author', action => \&mail, title => 'Send mail to author'}  
)
```

Definition at line **29** of file **users.cgi**.

Still in our Plans

- Search engine interface
 - Category management system
 - Users comments management
 - API to collaboration software
 - Uniform events format and interfaces
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Conclusion

- We have a good progress
 - Working prototype <http://mcdb.cern.ch>
 - Plan to prepare the first version of MCDB at the end of this year
- But still need to do a lot of things at the next year

