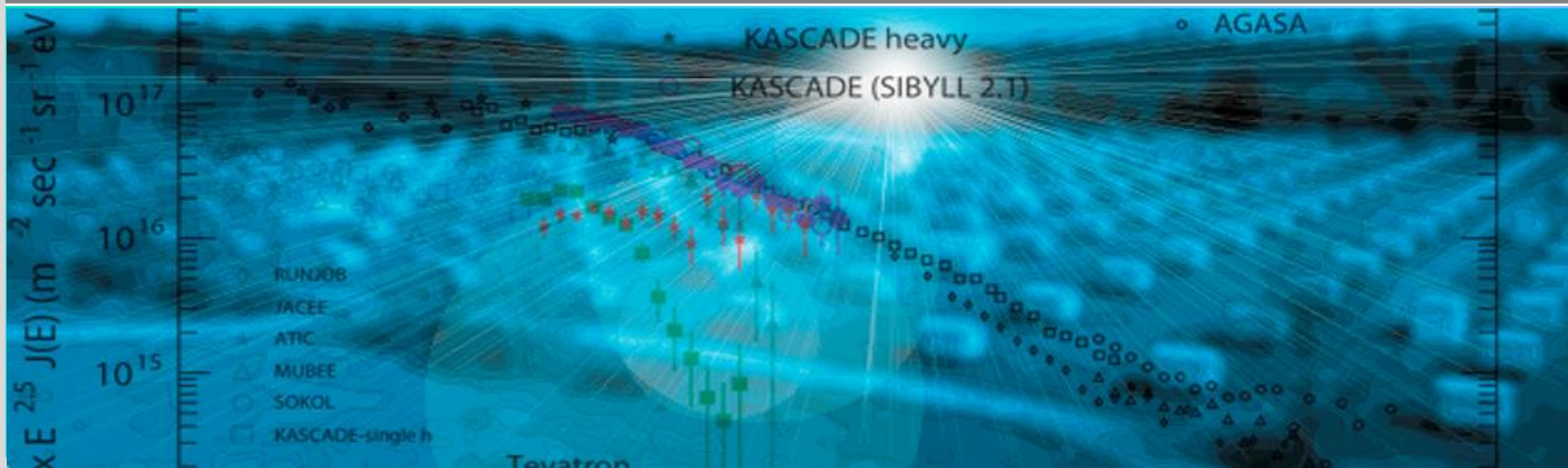


KCDC: releases and future perspectives

Institut für Kernphysik (IKP)

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What is KCDC ?

Acronym for “KASCADE Cosmic ray Data Centre”

- Aim: installation and establishment of the first public data centre for high-energy astroparticle physics based on the data of the KASCADE-Grande experiment;
- How: provision of the KASCADE-Grande data through a web-based interface;
- What: we published measured and reconstructed data, calibration data, event information,
- from 4 KASCADE-Grande detector components:
- the KASCADE detector array (252 stations),
 - the GRANDE detector array (37 stations),
 - the Central Hadron Calorimeter (> 40.000 data channels),
 - the Radio LOPES (30 antennas),
- More: additionally we publish:
- matching simulations for all detector components but LOPES,
 - Preselected data sets for direct download,
 - detailed documentations,
 - up to now 98 spectra data sets from 26 high-energy cosmic ray experiments published between 1984 and 2020 for download.


KCDC web portal





Karlsruhe Institute of Technology

[[juergen]] | KIT | IKP | HOME | Impressum | admin | logout




KASCADE Cosmic Ray Data Centre (KCDC) / Open β


- KCDC Homepage
- KCDC Motivation
- KCDC Regulations
- Information
- Announcements
- FAQs
- User Account
- Data Shops
- Simulations
- Spectra
- Materials
- Publications
- Report a Bug
- Education/Lehre

Welcome to kcdc

The aim of the project **KCDC** (KASCADE Cosmic Ray Data Centre) is the installation and establishment of a public data centre for high-energy astroparticle physics based on the data of the KASCADE experiment. KASCADE was a very successful large detector array which recorded data during more than 20 years on site of the KIT-Campus North, Karlsruhe, Germany (formerly Forschungszentrum, Karlsruhe) at 49,1°N, 8,4°E; 110m a.s.l. KASCADE collected within its lifetime more than 1.7 billion events of which some 433.000.000 survived all quality cuts and are made available here for public usage via two DataShops. The first, called 'KASCADE', was introduced in 2013 and has been continuously extended since then. It contains data from four KASCADE-Grande detectors, which were analysed separately. The second, called COMBINED, is based on a subsample of the KASCADE-Grande data, but was evaluated in a joint analysis of the KASCADE and GRANDE detector arrays.



KASCADE
Karlsruhe Shower Core
and Array Detector



+++ The new KCDC version PENTARUS 1.0 has been released - a new DataShop 'COM

KCDC OPEN - BETA - VERSION PENTARUS 1.0 BASED ON: KAOS (1.1.0)

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Downloads
[KCDC Materials](#)

<https://kcdc.ikp.kit.edu>

past KCDC releases

- 7 major releases for the *KASCADE* DataShop;
- **data from the separate analysis of the 'KASCADE' and 'GRANDE' detectors, the Central Hadron Calorimeter and radio LOPES were published;**
- **first release in Nov 2013, ~158 Mio events, 15 Quantities;**
- with every release we increased the number of events published or added more detector components from KASCADE-Grande;
- for the *KASCADE* DataShop we published:
 - > 433 Mio events,
 - 47 Quantities (like number of electrons, core position, angles etc.) from KASCADE, GRANDE, LOPES, Calorimeter,
 - 9 data arrays (like Energy deposits-, Arrival times etc. per detector station),
 - Stored in mongodb (3TB),
- **all detector components and quantities can be inserted and modified via a web-based 'admin interface';**

KCDC admin interface

[Home](#)
[KAOS DataShop](#)
[Components](#)
[grande](#)

Name: Display name:
Name as it will be displayed

Selection mode: Prefix:

Description [\(Show\)](#)

Quantities

Quantity: **Xc**

Name: Display name:
Name as it will be displayed

Selection mode:

Unit: Quant type:
Should be like: ""C \u00E5" to get ""C Å"

Quant sub type: will be ignored for dates

Cuts [\(Hide\)](#)

Allow cuts: ☒ Display format:
will be ignored for array like types only used for dates

Min value: Max value:
will be ignored for array like types Dates should be given like "2007-08-31" in UTC

Description [\(Hide\)](#)

Source Type of description:

Head of description:

Description:

Composit Data [\(Show\)](#)

Quantity: **Yc**

Name: Display name:
Name as it will be displayed

Selection mode:

new KCDC release PENTARUS



- A second data shop (*COMBINED*) came with the latest release on 26.5.2020
Data from the joint analysis of the 'KASCADE' and 'GRANDE' detector arrays of the KASCADE-Grande experiment were published
- What's new:
 - new backend programming to host more DataShops;
 - new components and the quantities are defined in the admin interface;
 - new mongoDB with *COMBINED* data;
 - generate matching simulations for 3 high-energy models (QGSJet-II-04, SIBYLL 2.3c, EPOS-LHC);
 - new Preselections added;
 - new documentations on *COMBINED* DataShop and *COMBINED* simulations written;
 - most of the dynamic and static pages adapted;
 - 'Materials' menu added ; some helpful information including 4 user manuals and some software downloads
 - complete redesign of 'Simulations' and 'Preselections' pages
 - fix data inconsistencies in mongoddb of the *KASCADE* DataShop (about 0.01% of the data were corrected due to an uncertainty in the data analysis software KRETA)

KCDC mongodb

- some numbers for present mongodb's for the two KCDC DataShops
 - *KASCADE* 'OCEANUS_1' size: 2927 GB
recorded: 1998 – 2013
events: 433 Mio
components 4 (KASCADE, GRANDE, LOPES, Calorimeter)
Quantities 47
Data arrays 9
 - *COMBINED* 'COMB_1' size: 128 GB
DataShop COMBINED
recorded: 2004 – 2010 (KASCADE and GRANDE joint)
events: 15 Mio
components 2 (COMBINED, LOPES)
Quantities 39
Data arrays 9

future perspectives

“we are prepared to add new data sets from other experiments to the KCDC DataShop”

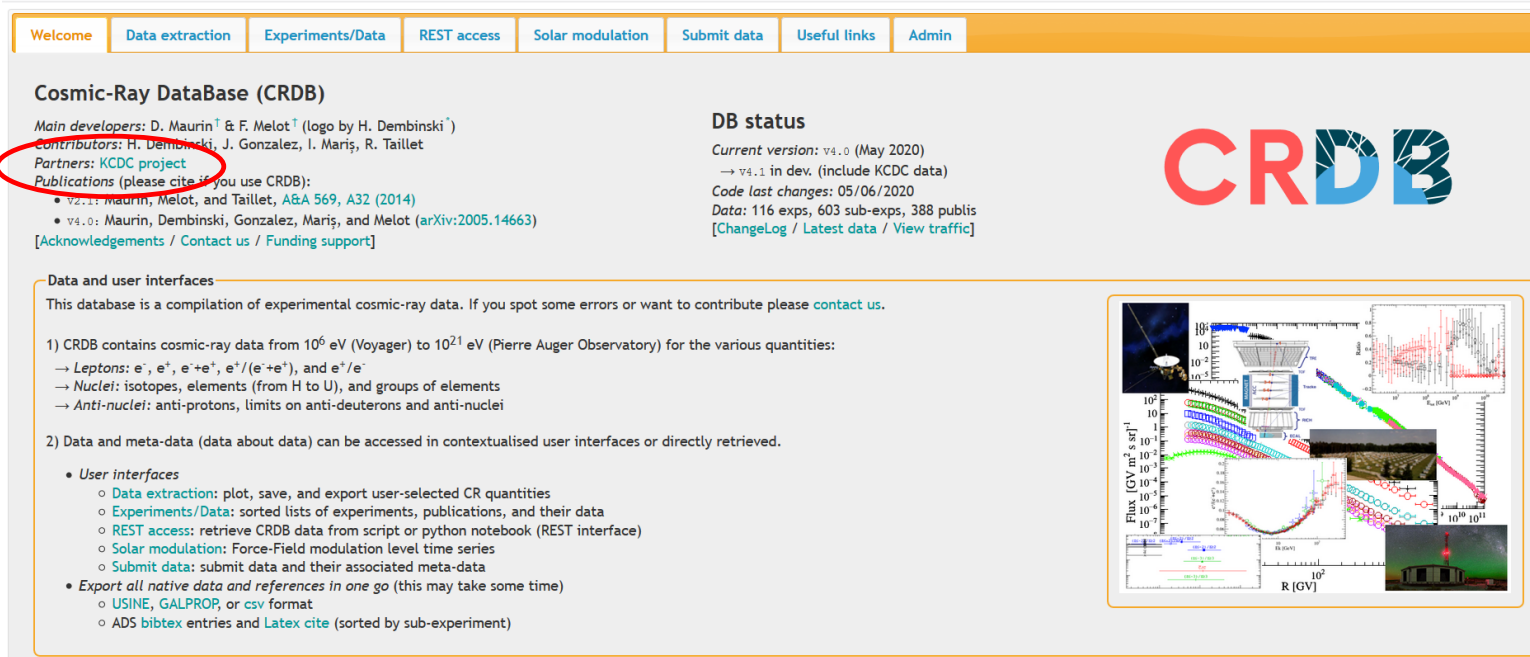
What is needed ?

- **new backend programming enables us to add new DataShops to the present structure within 15 minutes!**
- all DataShop information can be inserted via the web-based admin interface;
- a new mongo database must be filled (requires a filling routine);
- a documentation of the detector and the quantities has to be provided.

future perspectives

More perspectives

- We just started to form a partner project with CRDB around their Cosmic Ray database <https://lpsc.in2p3.fr/crdb/>



The screenshot shows the Cosmic-Ray DataBase (CRDB) website. The navigation bar includes links: Welcome, Data extraction, Experiments/Data, REST access, Solar modulation, Submit data, Useful links, and Admin. The main content area is titled "Cosmic-Ray DataBase (CRDB)" and lists main developers (D. Maurin[†] & F. Melot[†]), contributors (H. Dembinski, J. Gonzalez, I. Mariş, R. Taillet), and partners (KCDC project). It also mentions publications and provides a link to the database status. The "DB status" section indicates the current version is v4.0 (May 2020) and lists the number of experiments, sub-experiments, and publications. A large "CRDB" logo is displayed. The "Data and user interfaces" section describes the database as a compilation of experimental cosmic-ray data and lists various quantities and user interfaces available.

Cosmic-Ray DataBase (CRDB)

Main developers: D. Maurin[†] & F. Melot[†] (logo by H. Dembinski[†])
 Contributors: H. Dembinski, J. Gonzalez, I. Mariş, R. Taillet
 Partners: KCDC project
 Publications (please cite if you use CRDB):
 • v4.0: Maurin, Dembinski, Gonzalez, Mariş, and Melot (arXiv:2005.14663)
 [Acknowledgements / Contact us / Funding support]

DB status

Current version: v4.0 (May 2020)
 → v4.1 in dev. (include KCDC data)
 Code last changes: 05/06/2020
 Data: 116 exps, 603 sub-exps, 388 publis
 [ChangeLog / Latest data / View traffic]

CRDB

Data and user interfaces

This database is a compilation of experimental cosmic-ray data. If you spot some errors or want to contribute please [contact us](#).

1) CRDB contains cosmic-ray data from 10^6 eV (Voyager) to 10^{21} eV (Pierre Auger Observatory) for the various quantities:
 → Leptons: e^- , e^+ , e^-+e^+ , $e^+/(e^-+e^+)$, and e^-/e^+
 → Nuclei: isotopes, elements (from H to U), and groups of elements
 → Anti-nuclei: anti-protons, limits on anti-deuterons and anti-nuclei

2) Data and meta-data (data about data) can be accessed in contextualised user interfaces or directly retrieved.

- User interfaces
 - Data extraction: plot, save, and export user-selected CR quantities
 - Experiments/Data: sorted lists of experiments, publications, and their data
 - REST access: retrieve CRDB data from script or python notebook (REST interface)
 - Solar modulation: Force-Field modulation level time series
 - Submit data: submit data and their associated meta-data
- Export all native data and references in one go (this may take some time)
 - USINE, GALPROP, or csv format
 - ADS bibtex entries and Latex cite (sorted by sub-experiment)

- you can follow our activities on twitter https://twitter.com/kcdc_kit

Thank You !