

## Development of a Database for the Hall C’s Neutral Particle Spectrometer

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 October 29, 2021

For the Hall C Neutral Particle Spectrometer (NPS), a database is being developed for the results and analysis plots of simulations and instrumentation tests. This note presents features of the database.

A database for the results of simulations and for the results of instrumentation tests has been created with MariaDB Server, an open-source version of My Structured Query Language (MySQL). MariaDB has been selected because it is a part of the standard release of many Linux distributions and because it is open-source.

The MariaDB Server download package, which includes the command prompt MariaDB client, Fig 1, and HeidiSQL, a user-friendly GUI for MariaDB, Fig. 2, was installed on a local machine connected to the lab’s CUE network, selected because it allows site-wide access to the database.

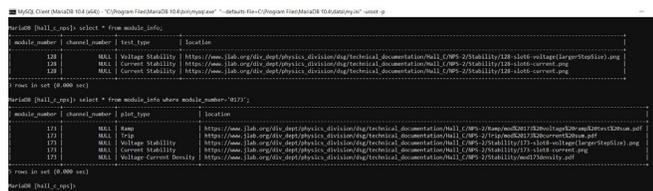


FIG. 1. Screenshot of the command prompt window showing queries and results from the `hall_c_nps` database.

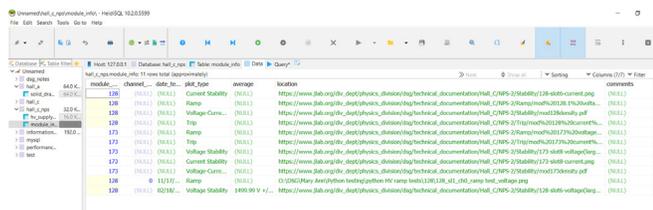


FIG. 2. Screenshot of the HeidiSQL window showing all records in the `hall_c_nps` database table `module_info`.

The `hall_c_nps` database consists of two database tables—`module_info` and `hv_supply_cable_info`. The `module_info` database table contains seven columns: `module_number`, `channel_number`, `date_tested`, `plot_type`, `average`, `location`, and `comments`. The `hv_supply_cable_info` database table contains six columns: `cable_number`, `date_tested`, `date_retested`, `plot_type`, `location`, and `comments`. The `location` columns of both tables contain links to the DSG website. The `plot_type` column for both tables lists the name of the simulation or test from which the plot was generated. Each record of a database table can be entered manually or can be read into the database from a text file or a spreadsheet.

To view a plot, the link listed in the `location` column needs to be copied to the browser. Image files require large amounts of disk space, so while it is not impossible to store image files in a MySQL database, it is not recommended. Standard SQL commands are used to input data and query the database, Fig. 3.

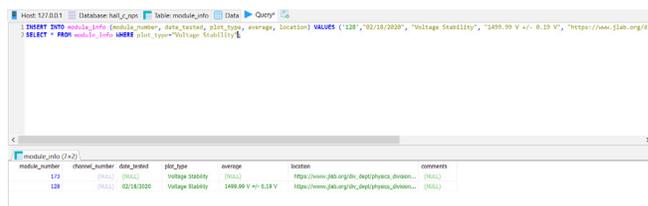


FIG. 3. Screenshot of HeidiSQL showing standard SQL queries (top) and the displayed results (below).

The database is password-protected, so to access the database, CUE network access to the machine on which the database is stored and a password are required. Further, user accounts can be created with different levels of privileges.

The database will serve as a central repository for all testing, analysis, and simulation information. A website to interface to the MariaDB database is currently being researched.