§32. myView, a User Friendly Data Viewer

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It is relatively difficult for the visitor to view the data of the LHD experiment if he is not familiar with the data management system in NIFS because he doesn't know how to find and read the experiment data. Therefore, user friendly data viewers are required for visitors. For this purpose, a data viewer called myView has been developed. In order to visualize the experiment data, commercial data visualization tools, such as IDL or MATLAB are often used. However, if the visualization is developed using these commercial software, it will cost the visitor to view the experiment data acquired in NIFS when he will go back to his office. On the other hand, because myView is written in Python, which is an open source program language, they can use myView without any cost. Most of the program is written in Python. In order to run myView, the following software is required; Python 2.6 or 2.7, optional Python modules wx and matplotlib, and two command line programs to obtain Kaiseki data [1] and LABCOM data [2]. All the source files of them is available and can run under various OS. Currently, myView supports Windows, Linux, and Mac OS X.

Fig.1 shows the main window of myView. The layout of the graph is very flexible; the user can define plotting area in at arbitrary position of the window, split the area into several panels, and plot multiple lines in each panel. The setting of the graph can be saved as a text file, called layout file. In order to view specific diagnostics quickly, several predefined layout files are provided by the file server.

At first, the experiment data is obtained using the data retrieving tools from the data management server. Therefore, it is necessary to connect to the LHD network. However, the retrieved data is stored into the cache directory, and they can be referred in offline mode. Therefore, myView can be used as a tool to retrieve the data, and the collaborator can analyze the acquired data after he leaves NIFS.

In addition to plot the graph manually, myView has two other automatic operation modes; the sequential and real-time mode. The sequential mode enables the user to plot the graphs of consecutive shot numbers at once. In this mode, all the graph can be stored into a single PDF file. Furthermore, all the retrieved data is stored into the cache directory, and it is useful to retrieve consecutive data at once. When myView is working in the real-time mode, it updates the shot number synchronizing the on-going experiment sequence, and redraw the graph. This function is useful to monitor the experiment.

The data module, which is called from the myView, is independent of the main program, and the user can develop his own data modules to read the custom format data (Fig.2). Currently, the module must be written in Python. However, the interface of the bridge modules that receive the data from the external program is defined. Therefore, the user will be able to develop the data module in his favorite computer languages, such as PV-Wave or FORTRAN, in near future.
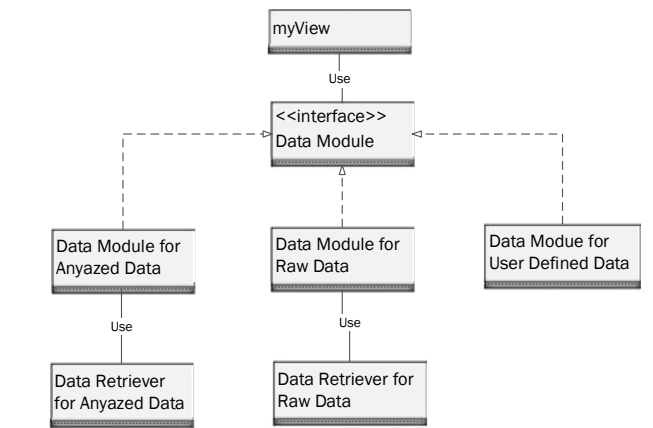

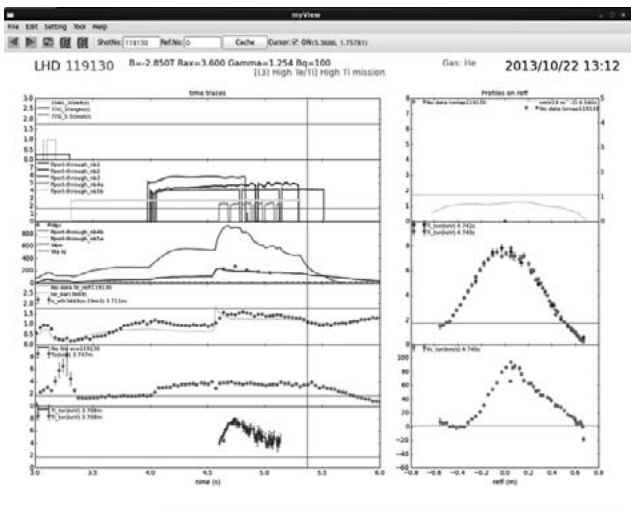Fig.2 myView can treat any data using the data modules that implements the data module interface.

[1] M. Emoto et.al., Fus. Eng. Des., 81 2019 (2006)
[2] H. Nakanishi et al., Fusion Sci. Technol. 58, 445 (2010)

Fig.1 The main window of myView