

## V107a FITSWebQL SE (Supercomputer Edition) の開発状況

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The authors present the latest developments around FITSWebQL: the software/service offered online by the Japanese Virtual Observatory (<https://jvo.nao.ac.jp/portal/top-page.do>) to users all over the world. The purpose of FITSWebQL is to enable users to preview in a web browser astronomical FITS data cubes, all without having to download the actual FITS files. The new version 5 is now being developed in response to the supported FITS files reaching sizes in excess of 1TB.

In order to preview smoothly terabyte-class data cubes, FITSWebQL has been undergoing a re-design from the ground up. On the client side (web browser) users can see instant improvements in the image manipulation area. All images are sent from the server in a High Dynamic Range OpenEXR compressed format as 32-bit floating point pixels, which enables instantaneous image manipulations (for example adjusting the black/white histogram levels) in a web browser without awaiting any further responses from the server. Server-side the underlying FITS data cubes are being aggressively compressed with ZFP (<https://github.com/LLNL/zfp>) to reduce the storage I/O bandwidth requirements (effectively trading storage speed for computing power). Apart from running on a multi-core single computing node, the new FITSWebQL SE (Supercomputer Edition) also supports a distributed execution across a supercomputing cluster. In a distributed mode the compressed data cubes are sub-divided into smaller chunks to be operated-on in parallel by cluster compute nodes.