

V101a FITSWEBQLSE とその周辺 (C/C++, FORTRAN, Rust, Julia, Python 等)

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We present an update on the development of FITSWebQL v5, the unique software developed at the Japanese Virtual observatory (JVO). In December 2021 the distributed computing-based FITSWEBQLSE (**S**upercomputer **E**dition) — supported by a KAKENHI grant — entered an initial *ALPHA* release: publicly available on a trial basis for selected ALMA FITS datasets.

Since the public release of the Rust language-based FITSWebQL v4 in late 2018, at JVO we have gone through three major changes of programming languages: from Rust to C/C++17, then CoArray FORTRAN 2018, finally settling on Julia due to its superior asynchronous distributed computing capabilities. The talk discusses in detail the rationale behind such drastic programming language changes. We also show a brief demo of Julia-based FITSWEBQLSE, which makes it possible to preview interactively (in near real-time) over 350GB-large FITS files from the comfort of a web browser.

Julia FITSWEBQLSE is not a mere duplication in Julia of the existing Rust FITSWebQL v4. Leveraging Julia's excellent Distributed.jl package, FITSWEBQLSE scales seamlessly from a single server to running on a supercomputer cluster, all supported by a single codebase. It also contains "bonus" features, for example a CSV spectrum export functionality, with PLAIN TEXT, JSON and/or FITS formats under consideration.