V118b FITSWebQL v4: JVO experience with Rust

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We presents a new version 4 of FITSWebQL, which has been re-written in the **Rust** programming language on the server side (see https://www.rust-lang.org/). Compared with the previously used C/C++ language, Rust brings the following benefits: i) improved stability, ii) better memory management and so-called iii) "fearless concurrency". In addition performance has also improved in some places, mainly thanks to better CPU load balancing of the Rust *rayon* data parallelism library as opposed to OpenMP in C/C++. The use of an integrated HTTP/WebSockets *actix-web* networking library available in Rust has made it possible to offer more responsive streaming downloads of partial FITS cut-outs.

On the client side the new version 4 introduces real-time streaming videos of FITS frequency channels when a user hovers a mouse over the frequency X-axis (also available via auto-play control buttons). Partially thanks to streamlined Rust memory management, the new version 4 supports previewing even 140GB-large FITS files in a web browser.

The standalone desktop version can be installed from the following GitHub repository:

`https://github.com/jvo203/fits_web_ql`