

## Development of the space-time information justification verification system of the GNSS satellite using VLBI correlation

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We challenged the new GNSS justification observation to verify the space-time information using CUDA GPU. For this purpose we have to develop the two-dimensional FFT search software for the VLBI-type delay and delay rate using very long FFT chip data longer than 32M points. It consumes very long time such as 2.6sec for 1 line of FFT even using Core i7 CPU. Thus we developed CUDA GPU FFT technology and got the dramatically improved results of 0.0141sec. We also developed the 2D visual verification software from many kinds of GNSS satellite group by calculating the orbit of GNSS and we successfully linked with CUDA FFT system. Using this system we succeeded to verify the GNSS justification.

Keywords: CUDA, GNSS, VLBI, Correlation processing, FFT, GPU