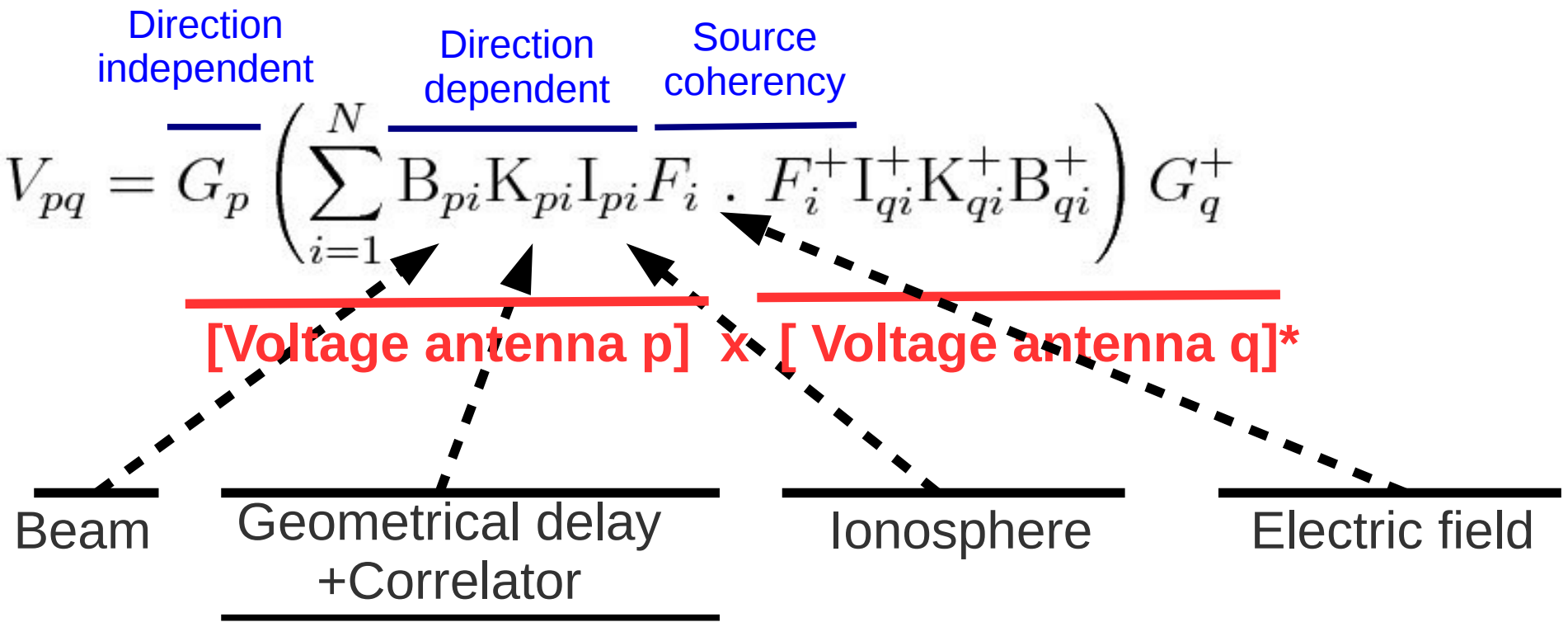
JAWS: the Joint AW Spheroidal imager

Bas, Cyril, Ger, Joris

JAWS: the official LOGO

JAWS: the theory



JAWS: the theory

Convolution function (4*4)

Beam (4*4)

W term (scalar)

$$\mathrm{Vec}(V_{pq}) = (G_q^* \otimes G_p)\mathrm{FT}\left[\left(E_{q,\vec{s}}^* \otimes E_{p,\vec{s}}.\exp\left(-2\pi i w_{pq}.\left(\sqrt{1-l^2-m^2}-1\right)\right)\right)\right]$$

Convolution → $\circledast \int_S \mathrm{Vec}(X_{\vec{s}}).\exp\left(-2\pi i(u_{pq}l + v_{pq}m)\right)dl.dm$

This is an EXACT map from sky plane to the Visibilities in the UVW space!

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BUT: The inverse map is approximative! (based on pseudo-inverse)

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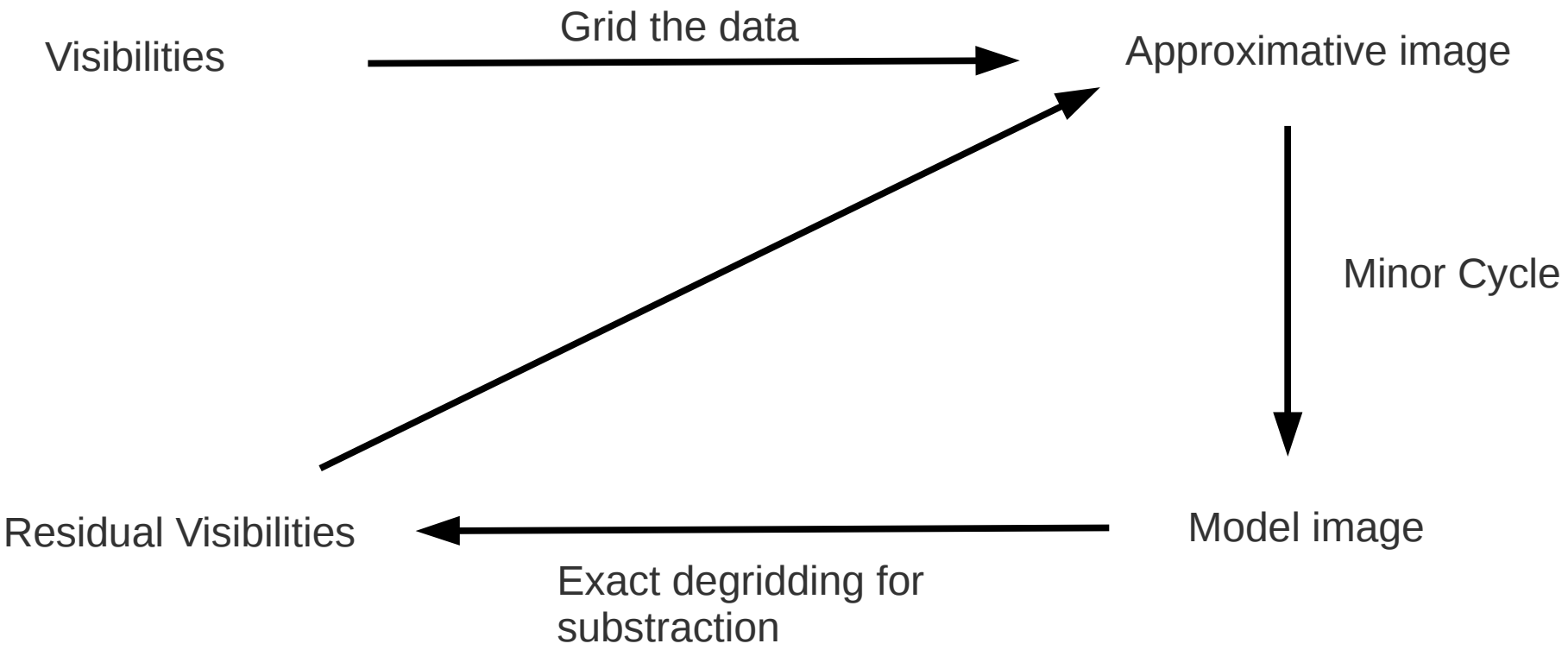


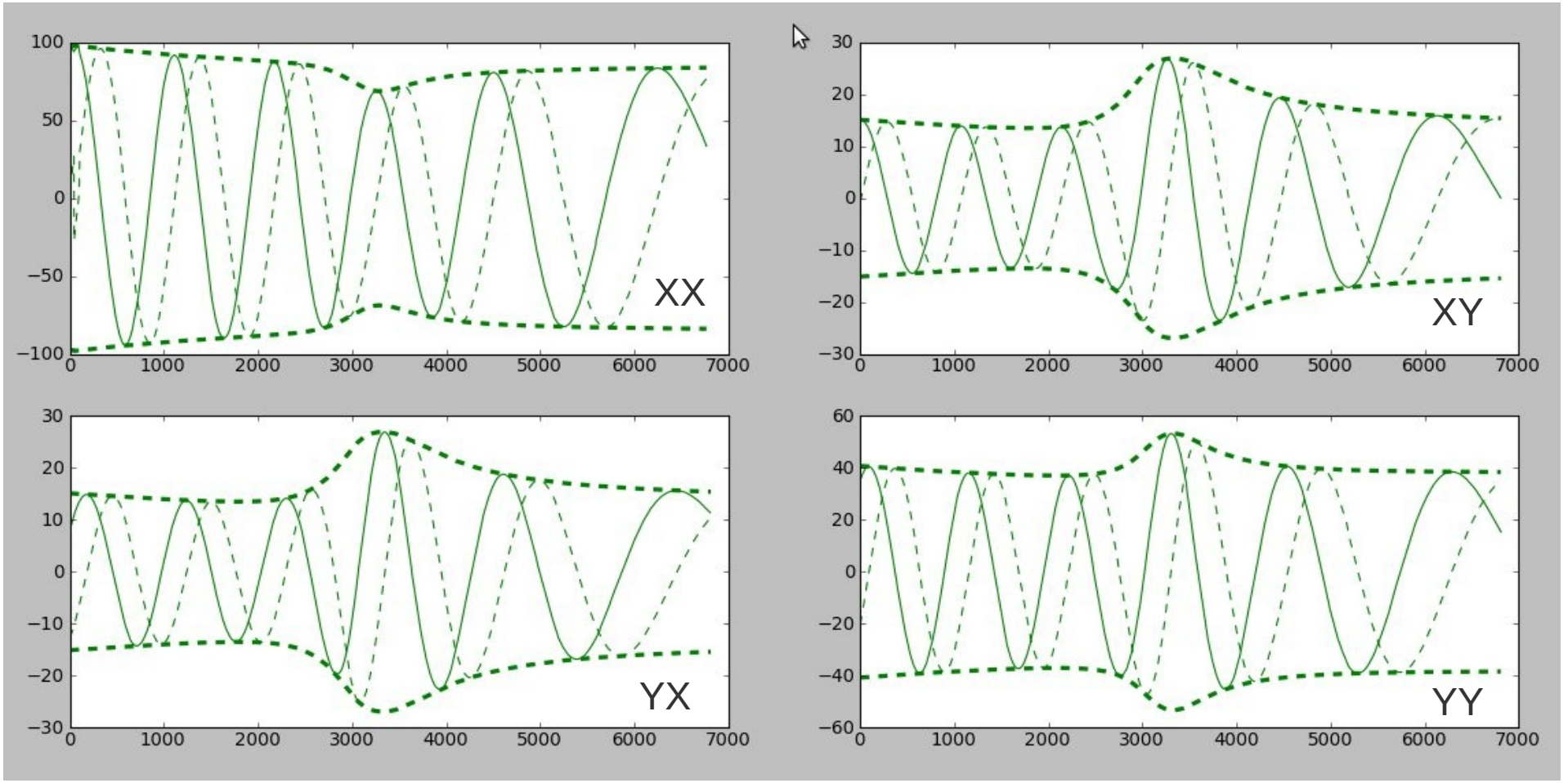
After a number of iteration, the flux in the clean component converges to the true values (to be studied)

JAWS: implementation

- Plugin to the casa architecture
- Full Stokes
- Convolution function is mapped by i,j,t, nu
- Ionosphere easy to plug in (JAWZ)
- Will run in parallel (very soon, version 1.0)

JAWS: mathematical framework-works

BBS predict (DFT)



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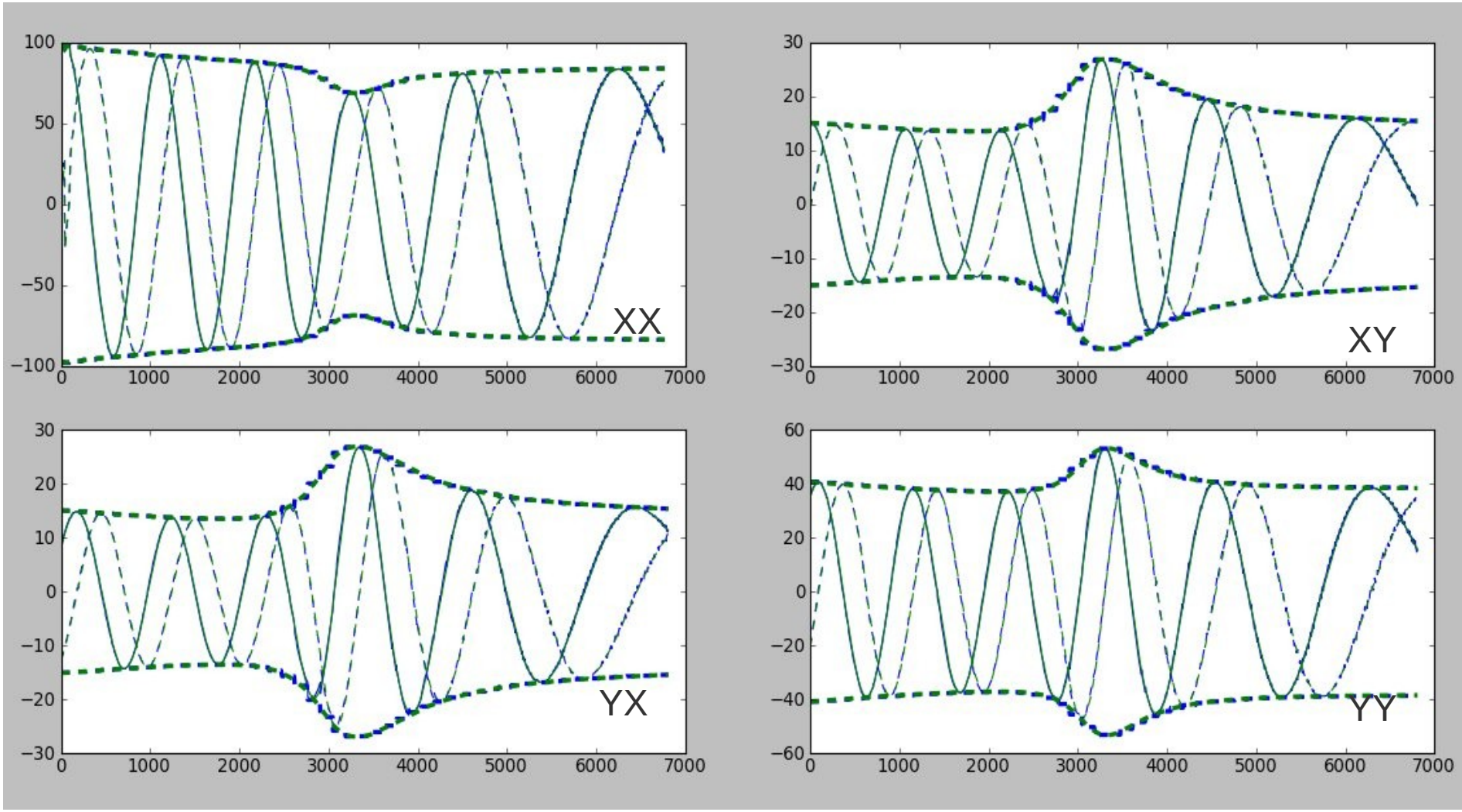

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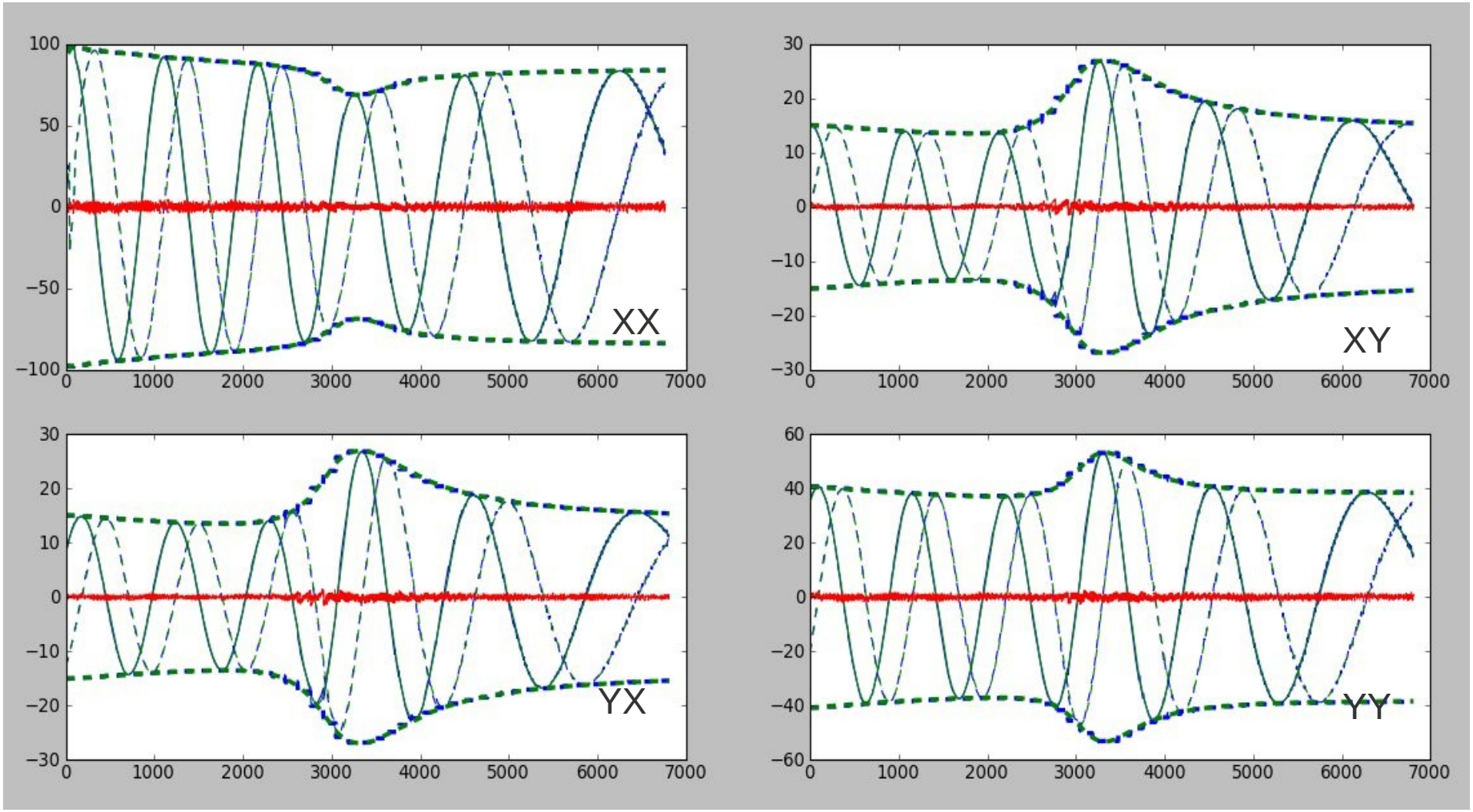

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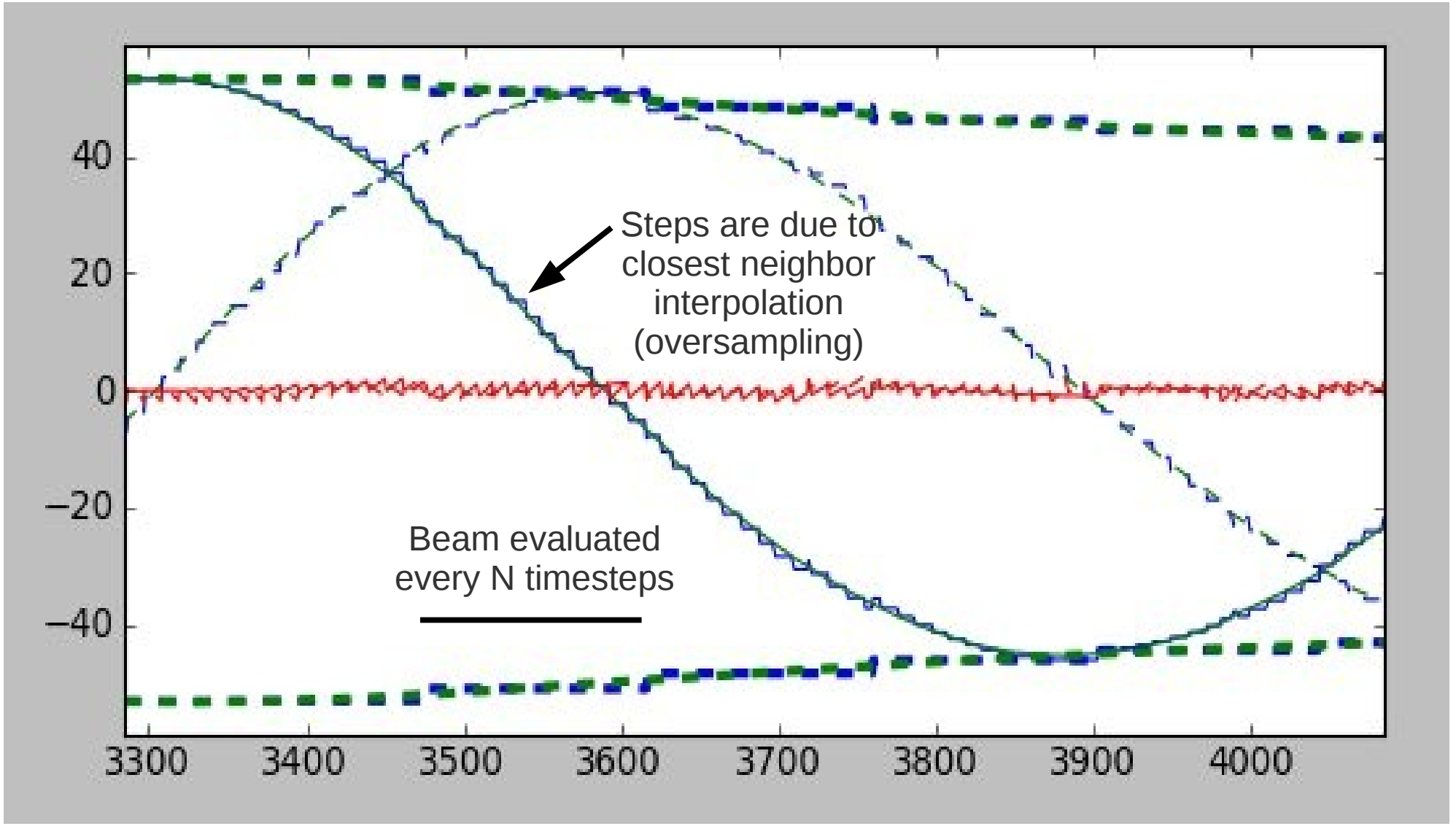

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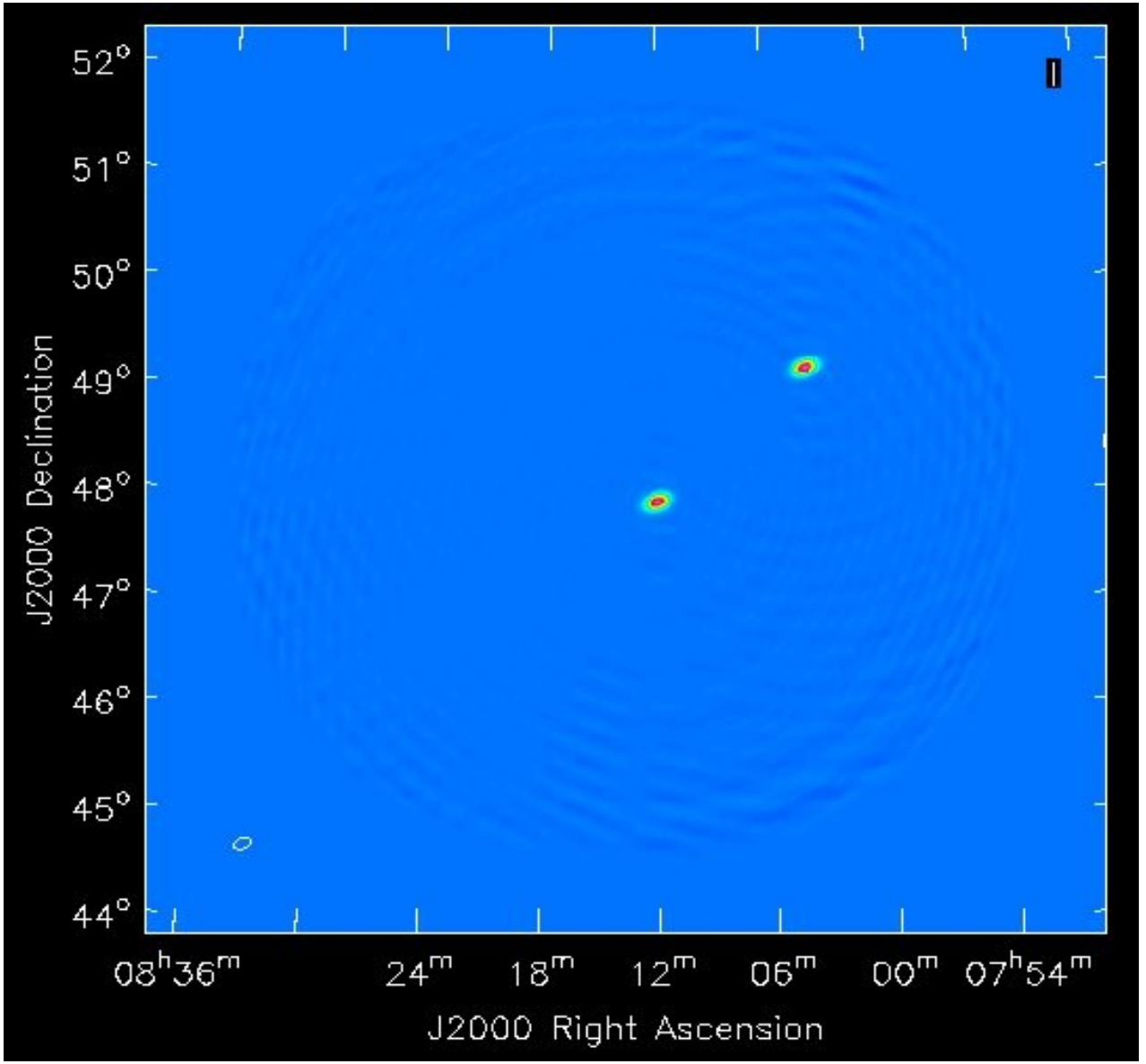

Recovered IQUV fluxes to better than 1%