

# **IMPROVING RECONSTRUCTION ACCURACY IN X-RAY CONE-BEAM MICROTOMOGRAPHY**

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One of the primary sources of reconstruction inaccuracy in X-ray microtomography is the mechanical rotation of specimen. Due to error in rotation axis alignment [1] and wobbling of rotational axis, conventional equal-spatial reconstruction cannot achieve optimal reconstruction.

Reconstructions of randomly orientated macromolecules performed in cryoEM has achieved with great success. The method uses iterative approaches to achieve optimal reconstruction which can apply to X-ray reconstruction. The proposed project is to use a Bayesian interpretation of X-ray structure determination. Development based on maximum a posteriori algorithm and statistical considerations that yield new insight into the accuracy with which the maximum-likelihood orientations of individual image may be determined. After acquire the image information, apply iterative refinement procedures to back projection. This provides more accurate projected angle. Application to experimental data indicates that the statistical approach has expected accuracy, stability and robustness.

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