Technical Note

MRCZ - A file format for cryo-TEM data with fast compression

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PII: S1047-8477(17)30208-3
DOI: https://doi.org/10.1016/j.jsb.2017.11.012
Reference: YJSBI 7129

To appear in: *Journal of Structural Biology*

Received Date: 24 March 2017
Revised Date: 20 November 2017
Accepted Date: 22 November 2017

Please cite this article as: McLeod, R.A., Diogo Righetto, R., Stewart, A., Stahlberg, H., MRCZ - A file format for cryo-TEM data with fast compression, *Journal of Structural Biology* (2017), doi: https://doi.org/10.1016/j.jsb.2017.11.012

MRCZ - A file format for cryo-TEM data with fast compression

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Abstract

The introduction of fast CMOS detectors is moving the field of transmission electron microscopy into the computer science field of big data. Automated data pipelines control the instrument and initial processing steps which imposes more onerous data transfer and archiving requirements. Here we conduct a technical demonstration whereby storage and read/write times are improved 10x at a dose rate of 1 e^-/pix/frame for data from a Gatan K2 direct-detection device by combination of integer decimation and lossless compression. The example project is hosted at *github.com/em-MRCZ* and released under the BSD license.