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Technical Note

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Robert A. McLeod, Ricardo Diogo Righetto, Andy Stewart, Henning Stahlberg

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

Robert A. McLeod^{1*}, Ricardo Diogo Righetto¹, Andy Stewart², Henning Stahlberg¹

¹ Center for Cellular Imaging and NanoAnalytics (C-CINA), University of Basel, Basel, Switzerland

² Department of Physics, University of Limerick, Limerick, Ireland

* Corresponding author: Robert A. McLeod, C-CINA, Biozentrum, University of Basel
(robbmcleod@gmail.com)

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.

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