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PyLOSt –a software package for sub-aperture stitching and data analysis of surface metrology data of reflective X-ray optics

The apertures of X-ray mirrors are often larger than the measurement apertures of common optical metrology instruments. To overcome this limitation, sub-aperture stitching is an increasingly used technique for X-ray mirror surface metrology. In this approach, the full surface is measured in a series of highly overlapped sub-apertures which are subsequently recombined numerically to recover the overall surface topography. The fidelity of the stitched data to the measured surface can be strongly influenced by the stitching algorithms which are employed. Although some commercial software is available to perform the numerical reconstruction of such surfaces, the algorithms employed are rarely documented and are inflexible for the implementation of new calculation strategies. PyLOSt (Python Large-Optic Stitching) is an open-source software tool designed to perform stitching and data analysis of surface metrology data. The standard software release includes several algorithms for stitching and performing routine operations such as surface fitting and extraction of statistical parameters. The code framework is also designed to allow the straightforward integration of new calculation tools for surface reconstruction and analysis. PyLOSt has been extended to run in the Orange data analysis suite which provides an intuitive interface to the data pre-processing, stitching and analysis tools. In this presentation we will showcase the current code features including global optimisation algorithms permitting the reduction of stitching errors.

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yes

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