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P2.26: Helical sample-stepping for faster speckle-based multi-modal tomography with the Unified Modulated Pattern Analysis (UMPA) model

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Speckle-based imaging (SBI) is a multi-modal X-ray technique that gives access to attenuation, phase-contrast, and dark-field signals. The signal retrieval with the Unified Modulated Pattern Analysis (UMPA) algorithm is based on the modulation of a reference speckle pattern generated from a sandpaper when a sample is inserted in the beam. By stepping the diffuser or the sample transversely to the beam direction, it is possible to get a better convergence of the model. Here, we show how a continuous helical acquisition can extend the detector's field-of-view and speed up the acquisition while maintaining a multi-frame approach for the signal retrieval of a test object.

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