Experimental data set for "Symmetry enforced state revival in time-varying photonic lattices"

A. Steinfurth, S. Weidemann, J. Feis, M. Kremer, and A. Szameit

1. General Information

Dataset title: Experimental data set for "Symmetry enforced state revival in time-varying photonic lattices"

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2. Description

This guideline for the data repository of publication [1] describes the acquisition, processing and structure of the measurement data.

3. Data Acquisition

The experimental data is acquired during a time-resolved measurement of light intensity by a photodiode (DET01CFC) in each loop of the coupled fibre loop setup. Here, 'V' and 'U' denote the longer and shorter loop, respectively. The signal is sampled by on oscilloscope (R&S RTO6) after being logarithmically amplified (logarithmic amplifier FEMTO HLVA-100). The time-resolved voltages have been undertaken a baseline correction and a renversement of the logarithmic scaling before being saved in the files provided in this repository.

4. Data Processing

According to the time-multiplexing scheme detailed in the methods section of publication [1], the pulse heights in the sampled voltages can be mapped onto an (1+1)D grid (m, n) with time steps m and position n. The characteristic time scales of the setup T and Δt can be extracted for each data set from the number of samples between pulses and round trips. Note that a normalization has been used in the displayed plots in publication [1] for a better visualization.

5. Data Format

The provided data sets are deposited in a .txt file format.

6. Archive Structure

The experimental data used in Figures 3 and S3 are provided. Note that both figures are based on the same measurement. Additionally, a reference measurement of an unmodulated lightwalk is included. The folder and file names are chosen to be descriptive of their content with 'v' and 'u' indicating the measurement in the respective loop.

7. References

[1]   A. Steinfurth, S. Weidemann, J. Feis, M. Kremer, and A. Szameit,
       Symmetry enforced state revival in time-varying photonic lattices. *Newton* (2025),
       http://doi.org/10.1016/j.newton.2025.100301