

DESCRIPTION OF ADDITIONAL SUPPLEMENTARY FILES

Supplementary Movie 1. Spin-wave propagation along straight domain wall. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$ (see Fig. 3a-e in the main manuscript). The images are smoothed with a Gaussian filter for enhancing contrast. The excitation frequency was 1.28 GHz, no static external field is applied. The total area visualized is 1250x1800 nm².

Supplementary Movie 2. Spin-wave propagation along straight domain wall, raw data. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$ (see Fig. 3a-e in the main manuscript). The excitation frequency was 1.28 GHz, no static external field is applied. The total area visualized is 1250x1800 nm².

Supplementary Movie 3. Spin-wave propagation along curved domain wall. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$ (see Fig. 3f-j in the main manuscript). The images are smoothed with a Gaussian filter for enhancing contrast. The excitation frequency was 1.11 GHz, no static external field is applied. The total area visualized is 1600x2300 nm².

Supplementary Movie 4. Spin-wave propagation along curved domain wall. raw data. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$ (see Fig. 3f-j in the main manuscript). The excitation frequency was 1.11 GHz, no static external field is applied. The total area visualized is 1600x2300 nm².

Supplementary Movie 5. Long propagation distance along curved domain wall. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$. The images are smoothed with a Gaussian filter for enhancing contrast. The excitation frequency was 0.96 GHz, no static external field is applied. The total area visualized is 2650x3350 nm².

Supplementary Movie 6. Long propagation distance along curved domain wall, raw data. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$. The images are smoothed with a Gaussian filter for enhancing contrast. The excitation frequency was 0.96 GHz, no static external field is applied. The total area visualized is 2650x3350 nm².

Supplementary Movie 7. Tunable superposition of 2 confined modes modes, 2 mT external field. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$ (see Fig. 5a-c). The images are smoothed with a Gaussian filter for enhancing contrast. The excitation frequency was 1.28 GHz, 2.00 mT static external field is applied. The total area visualized is 2550x3975 nm².

Supplementary Movie 8. Tunable superposition of 2 confined modes modes, 2 mT external field, raw data. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$ (see Fig. 5a-c). The excitation frequency was 1.28 GHz, 2.00 mT static external field is applied. The total area visualized is 2550x3975 nm².

Supplementary Movie 9. Tunable superposition of 2 confined modes modes, 1.75 mT external field. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$ (see Fig. 5a-c). The images are smoothed with a Gaussian filter for enhancing contrast. The excitation frequency was 1.28 GHz, 1.75 mT static external field was applied. The total area visualized is 2560x4000 nm².

Supplementary Movie 10. Tunable superposition of 2 confined modes modes, 1.75 mT external field, raw data. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$ (see Fig. 5a-c). The excitation frequency was 1.28 GHz, 1.75 mT static external field was applied. The total area visualized is 2560x4000 nm².

Supplementary Movie 11. Tunable superposition of 2 confined modes modes, 1.68 mT external field. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$ (see Fig. 5a-c). The images are smoothed with a Gaussian filter for enhancing contrast. The excitation frequency was 1.28 GHz, 1.68 mT static external field was applied. The total area visualized is 2560x4000 nm².

Supplementary Movie 12. Tunable superposition of 2 confined modes modes, 1.68 mT external field, raw data. Time-resolved images acquired stroboscopically via STXM, showing the $\Delta M_x(t)$ (see Fig. 5a-c). The excitation frequency was 1.28 GHz, 1.68 mT static external field was applied. The total area visualized is 2560x4000 nm².

Supplementary Movie 13. Time-resolved $M_x(t)$ images of spin-waves propagating along the curved wall. Time-resolved images acquired stroboscopically via STXM, showing the $M_x(t)$ (see Fig. 3f-j). The images are smoothed with a Gaussian filter for enhancing contrast. The excitation frequency was 1.11 GHz, no static external field was applied. The total area visualized is 1600x2300 nm².

Supplementary Movie 14. Time-resolved $M_x(t)$ images of spin-waves propagating along the curved wall, raw data. Time-resolved images acquired stroboscopically via STXM, showing the $M_x(t)$ (see Fig. 3f-j). The excitation frequency was 1.11 GHz, no static external field was applied. The total area visualized is 1600x2300 nm².