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Ocean wave impacting arrival time stability at EuXFEL

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At X-ray free electron lasers a high temporal stability of produced photon pulses is a key parameter for many classes of experiments using a pump-probe scheme. At the European XFEL an optical synchronization system in combination with beam-based feedbacks guarantees an FEL-to-laser pulse short-term jitter on the sub-10 fs level. However, environmental factors acting on different time scales lead to residual timing drifts between external lasers and FEL pulses and require additional measures to disentangle the overlaid effects. Here, we present results from investigation of drifts induced by ocean waves of the North Sea and the Atlantic Ocean.

Summary

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