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Update on R&D using intelligent Distributed Acoustic Sensing (iDAS)

Thursday 26 June 2025 15:41 (3 minutes)

Distributed acoustic sensing allow precise strain detection with high spatial and temporal resolution over many kilometres of optical fibre proving information from ten thousand of sensors simultaneously. In this way, seismic and acoustic waves perturbating our accelerators and experiments can be monitored, perturbation sources localized, damping mechanism and vibration mitigation path be evaluated and in future, real-time feedbacks established. Our fibre network, spanning the DESY campus and the European XFEL tunnels, was recently extended including the 2.3 km of the PETRA storage ring. Various phenomena's have been investigate either caused by nature (earthquake, ocean waves, lightning strikes···) or civilization (road and air traffic, compressors, Taylor Swift Quakes,..). New algorithms were developed or have been tested to clean, filter or compress the large data stream, to predict seismic perturbations, to categorize seismic sources or geolocate its origin. The presentation will give an overview on recent activities using iDAS at DESY.

Summary

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