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## Report on the Development of a Real-time Redundancy Subsystem for the Master Oscillator of the European XFEL

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We present recent advancements in the development of the real-time redundancy subsystem for the Master Oscillator of the European XFEL. This system improves upon the usual method of manually switching to a hot-spare in the event of a failure in the main source. Its primary objective is to maintain uninterrupted operation of the facility by minimizing the impact of potential Master Oscillator failures. By combining continuous monitoring, low-latency switching, and synchronization, the system ensures that failures result in only a brief and minor disturbance instead of a complete loss of a usable signal. As a result, little influence on the downstream systems is expected. We provide examples of the system's operation under laboratory conditions, summarize the achieved performance, discuss encountered issues, and outline further plans.

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