

XFEL MO and RF Phase Reference Distribution

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One of the most important requirements for the European XFEL RF system is to assure a very precise RF field stability within the accelerating cavities. The required amplitude and phase stability equals respectively $\Delta A/A < 3 \times 10^{-5}$, $\Delta \phi < 0.01$ deg @ 1.3GHz in the injector and $\Delta A/A < 1 \times 10^{-3}$, $\Delta \phi < 0.1$ deg @ 1.3GHz in the main LINAC section. Fulfilling such requirements for the 3.4 km long facility is a very challenging task. We describe the proposed architecture of the RF Master Oscillator and the Phase Reference Distribution System designed to assure high precision and reliability. A system of RF cable based interferometers supported by femtosecond-stable optical links will be used to distribute RF reference signals with required short and long term phase stability. We also present test results of prototype devices performed to validate our concept

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