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Development of RF reference distribution system for Hefei Advanced Light Facility

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Hefei Advanced Light Facility (HALF) is a diffraction-limited storage ring-based light source consists of a 180 m linear accelerator and a 480 m storage ring. The RF reference signal included 499.8 MHz and 2856 MHz are generated from two phase-locked master oscillators and transmitted to the RF system, beam position monitor system, timing system and beamline station by the phase stabled coaxial cables which are installed in the ± 0.5 °C thermostatic bath. The RF Reference Distribution System (RF-RDS) are developed to realize the phase synchronization and transmission with low phase noise for long distance. The continues wave amplifier are manufactured to generate enough RF power, with the added phase noise being less than 1 fs (10 Hz~10 MHz). The phase noise of each receiving terminal is estimated be less than 30 fs (10 Hz~10 MHz). The design of RF-RDS and experimental result are discussed in this paper.

Footnotes

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Primary author: WU, Kunlin (University of Science and Technology of China)

Co-authors: DU, Baiting (University of Science and Technology of China); MA, ShaoHang (University of Science and Technology of China); ZHANG, Shancai (University of Science and Technology of China); PANG, Jian (University of Science and Technology of China); DONG, Shaoxiang (University of Science and Technology of China)

Presenter: DONG, Shaoxiang (University of Science and Technology of China)

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