

**A New 500 MHz Fifth Harmonic RF System for Super-ACO\***, G. FLYNN, J.-M. GODEFROY, J. POLIAN, F. RIBEIRO, T. RUAN, LURE - A new 500 MHz fifth harmonic RF system has recently been installed on the Super-ACO storage ring primarily for bunch length reduction for Free-electron laser (FEL) and time resolved synchrotron radiation experiments. This system, intended for neutral phase operation, uses an ELETTRA cavity and a 35 kW CW, tetrode-based, television amplifier fabricated by Thomson. Maximum RF voltage is about 300 kV. Other major components, including power supplies and a modular 1 kW MOSFET solid-state preamplifier optimised for fixed frequency operation, were designed and realised in-house. Each module furnishes 10 dB of gain and up to 150 W maximum output power. The RF amplitude and phase feedback loops were optimised to respect the very stringent requirements necessary for stable FEL operation. They maintain 1% amplitude/1 $\infty$  phase stability with 1 kHz bandwidth. We present a detailed description of this RF system as well as the first year's operating experience.

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