

A Third-Harmonic RF Cavity for the Advanced Light Source*, J. BYRD, T. HENDERSON,

C.C. LO, R.A. RIMMER, LBNL; M. FRANKS, LLNL
- It is proposed to upgrade the Advanced Light Source by the addition of an RF system at the third-harmonic (1.5 GHz), of the existing system. With the new system it will be possible to control the bunch length and charge density profile independently of the RF bucket height, improving the Touschek-dominated beam lifetime. A third-harmonic cavity design is described which has good efficiency and is relatively simple to manufacture. The cavity shape is presented and issues of shunt impedance, power dissipation, higher-order modes, fabrication and installation are discussed. Design options for the cavity tuner and RF window are also considered.

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