Energy Aperture of the Advanced Light Source - A Comparison of Measurement and Calculations*, W. DECKING, D. ROBIN, LBNL - The lifetime of a low energy, small emittance synchrotron radiation source like the ALS is usually limited by the Touschek effect, which is proportional to the square of the energy aperture of the ring. Thus it is important to have a large energy aperture for achieving long lifetimes. This requirement is reached by providing enough rf-power for a large bucket and by avoiding the degradation of the energy aperture due to linear or non-linear synchro-betatron coupling where the particle exceeds the transverse aperture of the machine. We will show measurements of the changing energy aperture of the ALS due to transverse aperture restrictions, coupling, implementation of insertion devices, and sextupole settings. The results are compared with tracking calculations.

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