Progress Toward Operation of Aladdin at Lowered Emittance

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To increase the available photon flux density for users, alternate lattice tunings of the Aladdin synchrotron light source were developed with horizontal emittances significantly lower than the present value of 100 nm-rad. Reduction of the horizontal emittance by a factor of three has been obtained experimentally. When the fourth harmonic cavity is used to lengthen the bunch, the observed beam lifetime with the new lattice is not significantly changed from that of the existing lattice. The present goal is to achieve a factor of four horizontal and a factor of two vertical emittance reduction routinely. Progress in making this new configuration fully operational is discussed, including the use of quadrupole shunts with correction software for betafunction and dispersion correction, modifications of the rf systems for enhanced stability, and beam characterization with new optical monitoring stations.

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