

QUADRUPOLE FIELD ABERRATIONS:  
A SOURCE OF EMITTANCE GROWTH AT LAMPF<sup>a</sup>

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Nonlinearities in the field of magnetic quadrupoles are known to affect the beam quality in any transport system. The numerical models used for calculating the beam dynamics in both the drift tube and side coupled portions of the LAMPF linac have been modified to include the effects of multipole aberrations. Using values of multipole components measured for representative magnets, numerical calculations have been carried out to study their effect on beam quality. When misalignments are included, the simulations show an asymmetric emittance growth in both portions of the linac.

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