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Dynamical Aperture Control in Accelerator Lattices With Multipole Potentials

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We apply two analytical methods to control accelerator dynamic aperture with multipole potentials. Both methods assume that accelerator model is represented as a product of unperturbed and perturbed exponential operators with exponent of perturbed operator given as formal power series in perturbation parameter. Normal form method can be applied to the above representation and then the lattice parameters are used to control normal form Hamiltonian coefficients. Hamiltonian can be used to compute control term. The lattice parameters are fitted to approximate corresponding controlled operator.

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