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Non-linear modeling of accelerators

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Only very recently it became possible to even contemplate about effective non-linear modeling of accelerators, on the other hand modern superconducting require such modeling for proper correction of nonlinear effects. In recent years, one has begun to carefully measure harmonics and misalignments of all magnets of an accelerator and to provide transfer functions for the control system, reliable 1000 turn BPM systems have been made available including appropriate beam exciters, optics codes have reached a new level of sophistication and new analysis tools have been developed for a direct measurement of nonlinear components. In essence, non-linear modeling has become equivalent to linear modeling.

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