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PICTURE OF NONLINEAR COUPLING USING DECOUPLING TRANSFORMATIONS

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Linear coupling in a storage ring is conveniently analyzed in terms of transformations that put the single-turn map into block-diagonal form. Such a transformation allows us to define new variables, in which the dynamics are uncoupled. In principle, a similar approach may be taken to nonlinear coupling; we discuss such an approach in this paper, giving some simple illustrations of the ideas, based on the well-known techniques of normal form analysis. We also discuss some obstacles to finding a nonlinear decoupling transformation in the general case.

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