Monotonic and Nonmonotonic Area Preserving Maps, and Related Bifurcations in Laser Accelerators[*], L.G. BRUNNET, G. CORSO, R. PAKTER, and F.B. RIZZATO, IF-UFRGS, Caixa Postal 15051, BR - 91501-970 Porto Alegre, RS, Brasil - In this paper we analyse the behaviour of area preserving maps and related bifurcations in accelerator systems under variation of the tuning involving orbital and external wave frequencies. It is found that while sharp tuning leads to nonmonotonic maps [1], poor tuning leads to monotonic maps [2]. The transition between these two situations and the associated sequences of bifurcations are studied in detail [3]. Stability issues are also discussed. In particular a threshold value of the laser amplitude is calculated. Below the threshold one has stable dynamics coexisting with a variety of saddle-node bifurcations and above the threshold one has orbital dynamics rendered unstable by full cascades of period doublings.

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