ANALYTICAL APPROXIMATION OF THE SOLUTION OF THE DISSIPATIVE STANDARD MAP

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Abstract: We consider a dissipative mapping derived from a modification of the Chirikov standard mapping. For definiteness, we assume that the dissipative strenght is of the order of the square of the perturbing parameter of the conservative model. Under this simplifying assumption, we derive an analytical approximation of the solution associated to the dissipative mapping. The equations are explicitely solved up to the order 7 in the perturbing parameter.

Having fixed a frequency ω, a comparison of the associated conservative and dissipative solutions shows that the two curves coincide for low values of the perturbing parameter, while in most cases they get different as the break–down threshold of the invariant curve with rotation number ω is approached.

Keywords: Standard map, dissipation, invariant curves.