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## On the Bifurcations of a Hamiltonian Having Three Homoclinic Loops Under $Z_3$ Invariant Quintic Perturbations

吴玉海(1), 韩茂安(2)

(1)江苏大学数学系; (2)上海师范大学数学系

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摘要

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## On the Bifurcations of a Hamiltonian Having Three Homoclinic Loops Under $Z_3$ Invariant Quintic Perturbations

Yu Hai WU(1), Mao An HAN(2)

(1)Department of Mathematics, Jiang Su University, Zhenjiang 212013, P. R. China; (2)Department of Mathematics, Shanghai Jiaotong University, Shanghai 200030, P. R. China

**Abstract** A cubic system having three homoclinic loops perturbed by  $Z_3$  invariant quintic polynomials is considered. By applying the qualitative method of differential equations and the numeric computing method, the Hopf bifurcation, homoclinic loop bifurcation and heteroclinic loop bifurcation of the above perturbed system are studied. It is found that the above system has at least 12 limit cycles and the distributions of limit cycles are also given.

**Key words** [homoclinic loop bifurcation](#) [heteroclinic loop bifurcation](#) [Hopf bifurcation](#) [stability](#) [limit cycles](#)

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通讯作者 吴玉海 [yuhaiwu@ujs.edu.cn](mailto:yuhaiwu@ujs.edu.cn)

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