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Heteroclinic tangles of the separatrix of double-null map ASIHA
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HALIMA ALI, Hampton University — The double-null map is the simplest symplec-
tic map that has the generic magnetic topology of double-null divertor tokamaks.
The generating function of the double-null map is given by $S(x,y) = x^2/2 + y^2/2 -$
$y^4/4$. $S = 1/4$ gives the separatrix surface. The scaling of safety factor on the
magnetic axis, q_0, with map parameter k is used to calculate the number of itera-
tions of the double-null map N_p that is equivalent to a single toroidal circuit of the
tokamak. The scaling of root mean square deviation of energy on the q_{95} surface
with map parameter k is taken as the estimate of magnetic asymmetry to represent
the magnetic perturbation from map parameter k. These data is used in the forward
and backward double-null maps to calculate the heteroclinic tangles of the ideal sep-
aratrix of generic double-null divertor tokamaks from magnetic asymmetries. This
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