The spatial critical points not moving along the heat flow II : The centrosymmetry

Rolando Magnanini & Shigeru Sakaguchi

March 13, 2000

Abstract

We consider solutions of initial-boundary value problems for the heat equation on bounded domains in R^N, and their spatial critical points as in the previous paper [MS]. In Dirichlet, Neumann, and Robin homogeneous initial-boundary value problems on bounded domains, it is proved that if the origin is a spatial critical point never moving for sufficiently many compactly supported initial data being centrosymmetric with respect to the origin, then the domain must be centrosymmetric with respect to the origin. Furthermore, we consider spatial zero points instead of spatial critical points, and prove some similar symmetry theorems. Also, it is proved that these symmetry theorems hold for initial-boundary value problems for the wave equation.