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transition on solid surface. In the present study, we present a microscopic description of nucleation phenomena involving clusters using a quantum statistical mechanical approach by hybridizing an effective Hamiltonian approach (partially dressed self-energy in Dyson's equation is introduced in this approach) and a conventional statistical mechanical method. Free energies and barrier heights are explored for various systems to realistically access nucleation rates. Finally propensity rules important for understanding nucleation mechanism will be highlighted based on the present study. These newly found propensity rules are in complete agreement with measurements.

F-2 Nonequilibrium Self-Organization versus Temporal Chaos. 문희태(한국과학기술대학).

Spatio-temporal dynamics of self-organized structures in the perturbed Nonlinear Schrödinger system are investigated by means of singular perturbation methods. Closely associated with spacial patterns, two types of temporal chaos are contrasted : 1) Fluctuation type ; Macroscopic organized motions are not destroyed but constantly corrected. Aperiodicity is brought by a cascade of period-doubling. 2) Turbulence type ; Random occurence of spatial coherence characterizes the dynamics. This involves homoclinic transverse intersection.

F-3 Period-1 Scaling Behaviors for Period Doublings in Symmetric 4-dimensional Volume-preserving Maps. Sang-Yoon Kim (KNU). We study period-doublings in symmetric 4-dimensional volume-preserving maps which was first studied by Mao and Helleman[1]. We extended the 'bifurcation route' defined by Mao and Helleman[1] and find that there are more 'special bifurcation paths' than those found by them. Furthermore,we find that the fundamental noncoordinate scaling factors are δ_1 and δ_2(divergence rates from the fixed map) and δ_1' and δ_2' (convergence rates to the fixed map). That is, the parameter scaling factors of any 'bifurcation paths' are combinations of these four fundamental scaling factors.

1.J.M.Mao and R.H.G. Helleman, Phys. Rev. A35, 1847(1987)

F-4 Period-2 Scaling Behaviors for Period Doublings in Symmetric 4-dimensional Volume-preserving Maps. Sang-Yoon Kim (KNU),Bambi Hu and Jian-Min Mao (Univ. of Houston). We study period doublings in a symmetrically coupled Henon's map. We find that there is only one kind of 'period-2 route' and there are an infinity number of 'period-2 paths' for each 'period-2 route'. The critical behaviors at the