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Universality of period-quintupling and period-sextupling bifurcations for area-preserving maps. Koo-Chul Lee and Sang-Yoon Kim (S.N.U.) and Duk-In Choi (KAIST).

We have studied numerically period-quintupling and period-sextupling cascades of periodic orbits of 2-dim. area-preserving maps. The period-quintupling $\delta_n^q$ sequence converges as $n \to \infty$, and the limit value is 20.048. Like the period-doubling bifurcation, the rescaling can be done at every other quintupling rather than a single quintupling and the rescaling factor along the symmetry line is $-43.27$ and the rescaling factor across the symmetry line is $-75.70$. Like the period-doubling and the period-quadrupling bifurcations, there is only one limit value for each of the period-sextupling $\delta_n^p$, $\delta_n^q$, and $\beta_n^p$ sequences. These limit values are $\delta = 13.85$, $\alpha = -8.25$ and $\beta = 6.30$.

Monte Carlo Study of Potts Models in Random Fields. Jong Hoon Oh and Duk-In Choi (KAIST). The $q$-state Potts model is studied using Monte Carlo method in the presence of random fields, which locally prefer ordering of any one of $q$ states. In $d$-dimensions, the transitions are expected to become first order for $q < q_c^r(d)$. As in the nonrandom case, mean-field theory still yields $q_c(d) = 2$ for all $d$. Recently Blankschtein et al. argued that fluctuations shift $q_c(d)$ into significantly higher value than nonrandom value, $q_c^r(d)$. For $q_c^r(d) < q < q_c(d)$ we thus expect random fields turn the discontinuous transitions into continuous ones. We investigated this argument using Monte Carlo method. At $d = 3$ case of $q = 3$ and 4 are tested. The case $q = 4$ at $d = 2$ is also studied.