Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

A State Dependent Potts Model[1] GABRIELL MÁTÉ, Institute for Theoretical Physics, Heidelberg University, Germany, RONALD DICKMAN, Departamento de Fsica, ICEx, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, DIETER W. HEERMANN, Institute for Theoretical Physics, Heidelberg University, Germany — Although the resolution of conventional confocal microscopy is limited, the images provided by this technique carry a tremendous amount of information. One of the most straightforward approaches to describe these images is to model them with a Potts model. However, in many cases the detected configurations correspond to a system characterized by a temperature close to the critical point, making it almost impossible to control this model. In this work we present a modified version of the Potts model which might be useful in such situations. The modification consists in introducing arbitrary couplings between different states. We argue that in the simplest case the modified model is equivalent to the original Potts model. We investigate it numerically with respect to criticality and observe a shift of the critical point as we vary the parameters. We also show that the model is capable of exhibiting more exotic behavior.

[1]GM gratefully acknowledges support from the HGS-MathComp and the RTG 1653

Dieter W. Heermann
Institute for Theoretical Physics, Heidelberg University, Germany

Date submitted: 08 Nov 2012 Electronic form version 1.4