Hybrid Defect Phase Transition: Renormalization Group and Monte Carlo Analysis MIRON KAUFMAN, Cleveland State University, H.T. DIEP, Universite de Cergy-Pontoise — For the q-state Potts model with $2 < q <= 4$ on the square lattice with a defect line, the order parameter on the defect line jumps discontinuously from zero to a nonzero value while the defect energy varies continuously with the temperature at the critical temperature. Monte-Carlo simulations (H. T. Diep, M. Kaufman, Phys Rev E 2009) of the q-state Potts model on a square lattice with a line of defects verify the renormalization group prediction (M. Kaufman, R. B. Griffiths, Phys Rev B 1982) on the occurrence of the hybrid transition on the defect line. This is interesting since for those q values the bulk transition is continuous. This hybrid (continuous - discontinuous) defect transition is induced by the infinite range correlations at the bulk critical point.

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