

**On nonlocal order parameters and phase transition in the
 $SU(2)$ -Higgs model**

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Abstract: We consider the $SU(2)$ -Higgs model in search for sensitive indicators of phase transitions in electroweak models with fixed length of Higgs field. We study nonlocal observables - gauge-invariant N -links ("N-glinks"), their Binder cumulant g_4 and susceptibility χ . In MC experiments on L^4 lattices (with $L = 8, 12$ and 16) we study dependences of average 4-glinks (gl_4), g_4 and χ (computed for 4-glinks) on hopping parameter k for $\beta = 2.0$ and $\beta = 2.4$. Using the curves $g_4(k)$ and $\chi(k)$ plotted for various L we find L -dependent estimates of critical values $k_c(\beta)$.