

ON THE POSSIBLE EXISTENCE OF NON-FISHER UNIVERSALITY CLASSES

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S u m m a r y

The critical exponents α , α' , β , γ' , and δ of the model of quark-gluon bags with surface tension are found as functions of the most general model parameters. Two versions of the model that generate the phase diagram of the strongly interacting matter with critical or tricritical endpoint, respectively, are considered. The analysis of the relations between the critical exponents (scaling laws) shows that the scaling can be violated in a general case. The question whether it is possible to restore the scaling laws with the help of the Fisher definition of the α'_s exponent and its generalizations α'_c and α'_m is studied. It is shown that the Fisher scaling relation can be recovered with the help of the generalizations α'_c and α'_m , whereas any definition of the α' exponent cannot help one to recover the Griffiths scaling relation in its traditional form. It is explicitly demonstrated that the additional condition $\alpha = \alpha'$ is not sufficient to restore the Griffiths scaling relation in the traditional form. It is also explicitly demonstrated that the additional condition $\alpha = \alpha'$ is not sufficient to restore the Griffiths scaling relation in the traditional form. A generalization of this scaling relation which is valid for all known models is suggested. The obtained results allow us to conclude on the possible existence of the non-Fisher universality classes, for which the traditional scaling relations can be violated, whereas the generalized scaling laws can be established.