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Localization at the quenched SU(3) phase transition

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It is known that the deconfining transition of QCD is accompanied by the appearance of localized eigenmodes at the low end of the Dirac spectrum. In the quenched case localization appears exactly at the critical temperature of deconfinement. In the present work, using quenched simulations exactly at the critical temperature we show that the localization properties of low Dirac modes change abruptly between the confined and deconfined phase. Moreover, in the deconfined phase localization occurs only in the real Polyakov loop sector. We also speculate on the connection between this phenomenon and fluctuations of the topological charge.

Primary author: Prof. KOVACS, G. Tamas (Eotvos Lorand University, Budapest)

Presenter: Prof. KOVACS, G. Tamas (Eotvos Lorand University, Budapest)

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