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Application of the parametric integration method with Goncharov polylogarithms in critical dynamics

Tuesday 28 October 2025 16:00 (15 minutes)

This talk is devoted to calculations in critical dynamic models using parametric integration with Goncharov polylogarithms, previously successfully applied in static problems and stochastic models of fully developed turbulence. The principal difficulty of dynamic calculations compared to static ones lies in the increase in the number of diagrams and the growing complexity of their structure. To address this issue, we propose an improved diagram reduction method that substantially decreases both the number of diagrams and the number of divergent dynamic subgraphs.
As an application, the 4-loop analytical calculation of the dynamic critical exponent z in Model A within the renormalization group and epsilon expansion will be presented. In addition, computations in the dynamic generalization of the ϕ^3 model will be considered.

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