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Search for continuous phase transitions in 5D pure SU(2) lattice gauge theory

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The Renormalization Group (RG) is one of the central and modern techniques in quantum field theory. Indeed, quantum field theories can be understood as flows between fixed points, representing Conformal Field Theories (CFT's), of the RG. Hence, the search and classification of yet unknown non-trivial CFT's is a legitimate endeavor. Analytical considerations point to the existence of such a fixed point in pure SU(2) Yang-Mills fields in 5D. This issue has already been addressed, although inconclusively. We review it, using lattice Monte Carlo methods, and present our results.

Primary authors: FLORIO, Adrien (EPFL - Ecole Polytechnique Federale Lausanne (CH)); VIANA, João (Centro de Física da Universidade do Porto); MATOS, José (FCUP); PENEDONES, João (EPFL)

Presenter: MATOS, José (FCUP)

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