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Branching of Center Vortices in SU(3) Lattice Gauge Theory

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The branching of center vortices in SU(3) Yang-Mills theory in maximal center gauge is analyzed. When properly normalized, one can define a branching probability that turns out to be independent of the lattice spacing (in the limited scaling window studied here). The branching probability shows a rapid change at the deconfinement phase transition which is much more pronounced in space slices of the lattice as compared to time slices. Though not a strict order parameter (in the sense that it vanishes in one phase) the branching probability is thus found to be a reliable indicator for both the location of the critical temperature and the geometric re-arrangement of vortex matter across the deconfinement phase transition

Primary author: Prof. REINHARDT, Hugo (Tübingen University)

Co-authors: Dr QUANDT, Markus; Mr SPRENGLER, Felix

Presenter: Prof. REINHARDT, Hugo (Tübingen University)

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