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Evidence of BRST-Symmetry Breaking in Lattice Minimal Landau Gauge

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By evaluating the so-called Bose-ghost propagator, we present the first numerical evidence of BRST-symmetry breaking in minimal Landau gauge, i.e. due to the restriction of the functional integration to the first Gribov region in the Gribov-Zwanziger approach. We find that our data are well described by a simple fitting function, which can be related to a massive gluon propagator in combination with an infrared-free (Faddeev-Popov) ghost propagator. As a consequence, the Bose-ghost propagator, which has been proposed as a carrier of the confining force in Yang-Mills theories in minimal Landau gauge, presents a 1/p^4 singularity in the infrared limit.

Primary author: Prof. CUCCHIERI, Attilio (University of Sao Paulo)

Co-authors: Dr DUDAL, David (Ghent University); Dr VANDERSICKEL, Nele (Ghent University); Prof. MENDES, Tereza (University of Sao Paulo)

Presenter: Prof. CUCCHIERI, Attilio (University of Sao Paulo)

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