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Lattice study of effective gluon mass at various boundary conditions

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We extract effective gluon mass from zero-momentum gluon correlators in the SU(2) lattice Quantum Chromodynamics (QCD). Lattice simulations of these correlators have been done both for (i) periodic and (ii) so-called "open" boundary conditions. We found that

the results for effective mass obtained in cases (i) and (ii) get closer when the lattice size increases. Nonzero effective gluon mass found for zero-momentum gluon correlators can be viewed as additional confirmation of "decoupling", or "massive", solution found in lattice simulations of momentum-dependent gluon correlators, accomplished both in SU(2) and SU(3) QCD.

Primary author: Dr BOGOLUBSKY, Igor (JINR, Dubna)

Co-author: Dr BOGOLUBSKAYA, Alla (JINR, Dubna)

Presenter: Dr BOGOLUBSKY, Igor (JINR, Dubna)

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