

Scattering of $J=0,2$ glueballs and their thermodynamic properties

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According to lattice QCD results, the two lightest glueballs are the scalar ($J^{PC} = 0^{++}$) and the tensor ($J^{PC} = 2^{++}$). From the well known dilaton potential that depends on a single dimensionful parameter, Λ_G , we study the scattering of two scalar and two tensor glueballs. From the scattering of two scalar glueballs we find that, using a proper unitarization scheme, a bound state, called glueballonium, can form if Λ_G is small enough. The value of the phase shift obtained from this analysis can then be used in a Glueball Resonance Gas model, that describes the YM thermodynamics in the confined phase, to estimate the correction of the interactions to the pressure.

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