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Hagedorn spectrum and equation of state of Yang-Mills theories

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We present a novel lattice calculation of the equation of state of SU(2) Yang-Mills theory in the confining phase.
We show that a gas of massive, non-interacting glueballs describes remarkably well the results, provided that a bosonic closed-string model is used to derive an exponentially growing Hagedorn spectrum for the heavy glueball states with no free parameters.
This effective model can be applied to SU(3) Yang-Mills theory and the theoretical prediction agrees nicely with the lattice results reported by Borsányi et al. in JHEP 07 (2012) 056.

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