

New DoS techniques for finite density lattice QCD

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We discuss two implementations of the recently developed density of states functional fit approach (DoS FFA) to lattice QCD at finite density. Both implementations are based on suitable pseudo-fermion representations of lattice QCD. The first approach identifies the imaginary part of the pseudo-fermion action in the grand-canonical picture and treats it with a direct application of DoS FFA. The second approach is based on the canonical formulation where physics at fixed net-quark number may be obtained with Fourier transformation with respect to imaginary chemical potential. The imaginary chemical potential is treated as an additional degree of freedom and DoS FFA is used to compute the corresponding density. The two formulations are discussed in detail and we present first tests.

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