$1/(N-1)$ **expansion, NRG, NCA, and exact** $T \to \infty$ **limit for the Green's function of an SU(N) Anderson impurity** AKIRA OGURI, Department of Physics, Osaka City University, RUI SAKANO, ISSP, University of Tokyo — We study the Green's function of the N-orbital Anderson impurity in a wide range of the Coulomb interaction U, frequency ω, and temperature T, carrying out the calculations with the $1/(N-1)$ expansion [1], the numerical renormalization group (NRG), the non-crossing approximation (NCA), and the exact expression that is available at high temperatures or the high-bias limit of a nonequilibrium steady state [2]. Comparisons of these approaches are made, specifically, for the $N = 4$ particle-hole symmetric case. The $1/(N-1)$ expansion is a new large N approach based on the perturbation theory in U [1], and is complementary to the NCA which uses the power series expansion in the hybridization matrix element V. The calculations with this approach are carried out up to order $1/(N-1)^2$, which reasonably capture the fluctuations beyond the random phase approximation (RPA) especially at low energies. We also discuss the N dependence for $N > 4$. [1] A.O., R. Sakano, and T. Fujii, PRB **84**, 113301 (2011).

[2] A.O. and R. Sakano, PRB **88**, 155424 (2013).

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