Analytic properties of insulating solution of half-filled Hubbard model[1] ALEXANDER JOURA, DENIS DEMCHENKO, JIM FREERICKS, Georgetown University — We discuss analytic properties of insulating solution of half-filled Hubbard model on the hypercubic lattice within DMFT framework. We use an approximation where Greens function is obtained as an average of two magnetic Hartree-Fock solutions. Under that assumption we obtain relations for the Greens function, self-energy and quasi-particle scattering time in two limiting cases, around zero frequency and at large frequencies, and a critical value of interaction U_c leading to metal-insulator transition. We compare our results for U_c with other approaches, including numerical renormalization group and iterated perturbation theory (IPT). We also discuss a possibility of extending our method to IPT approximation, which is widely used in studying half-filled Hubbard model in infinite dimensions.

[1](DMFT approach)

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