

t - J model at 50: What comes next?

J. Spałek^{1,*}

¹Institute of Theoretical Physics, Jagiellonian University, Kraków, Poland

*jozef.spalek@uj.edu.pl

In this talk I concentrate on specific features of the first derivation (1976) of the t - J model from the generalized Hubbard model [1], comprising both the limit of Anderson kinetic exchange of spin-spin interaction for the Mott-Hubbard insulator and, taking into account real-space pairing, its application to high-temperature superconductivity [2]. I also discuss the generalization of the approach to periodic Anderson model with an application to heavy-fermion systems. Those features, together with the specific quantum critical phenomena provide, in my view, the fundamental components of the theory of strongly correlated fermions established in the 1960s. Some related questions, such as introduction of the atomicity in the chemical bonding within a rigorous approach, are also briefly elaborated at the end.

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References

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