

# Publication activity — Václav Janiš

February 27, 2012

## A Original research papers

### A.1 Papers in impacted international research journals

- A.1.68 A. B. Shick, J. Kolorenč, V. Janiš, and A. I. Lichtenstein, *Orbital magnetic and extrinsic spin Hall effect for iron impurities in gold*, Phys. Rev. B **84**, 113112 (2011) 1-4.
- A.1.67 V. Janiš and A. Klíč, *Mean-field solution of the Potts glass near the transition temperature to the ordered phase*, Phys. Rev. B **84**, 064446 (2011) 1-10.
- A.1.66 V. Janiš and V. Pokorný, *Renormalized perturbation theories of Anderson localization: Self-consistent two-particle vertices*, Ann. Phys. (Berlin) **523** (2011) 715-23.
- A.1.65 P. Augustinský and V. Janiš, *Multiorbital simplified parquet equations for strongly correlated electrons*, Phys. Rev. B **83**, 035114 (2011)1 - 13.
- A.1.64 V. Janiš and A. Klíč, *Equilibrium state of the mean-field Potts glass*, J. Phys.: Condens. Matter **23**, 022204 (2011) 1 - 5.
- A.1.63 V. Pokorný and V. Janiš, *Vertex corrections to the electrical conductivity of the disordered Falicov-Kimball model*, Acta Phys. Polon. A **118** (2010) 922-3.
- A.1.62 V. Janiš and V. Pokorný, *Vertex corrections to the electrical conductivity in models with elastically scattered electrons*, Phys. Rev. B **81**, 165103 (2010) 1-9.
- A.1.61 V. Janiš, *Integrability of the diffusion pole in the diagrammatic description of noninteracting electrons in a random potential*, J. Phys.: Condens. Matter **21**, 485501 (2009) 1-8.
- A.1.60 V. Janiš and M. Ringel, *Magnetic properties of metallic impurities with strongly correlated electrons*, Acta Phys. Polon. A **115** (2009) 30-36.
- A.1.59 V. Janiš, A. Klíč and M. Ringel, *Replica-symmetry breaking: discrete and continuous schemes in the Sherrington-Kirkpatrick model*, J. Phys. A: Math. Theor. **41**, 324004 (2008) 1 - 14.
- A.1.58 V. Janiš, *Free-energy functional for the Sherrington-Kirkpatrick model: The Parisi formula completed*, Phys. Rev. B **77**, 104417 (2008) 1 - 5.
- A.1.57 V. Janiš and P. Augustinský, *Kondo behavior in the asymmetric Anderson model: Analytic approach*, Phys. Rev. B **77**, 085106 (2008) 1-11.
- A.1.56 V. Janiš and P. Augustinský, *Analytic impurity solver with Kondo strong-coupling asymptotics*, Phys. Rev. B **75**, 165108 (2007) 1-7.

- A.1.55 V. Janiš, *Green functions in the renormalized many-body perturbation theory for correlated and disordered electrons*, Condensed Matter Physics **9** (2006) 499-518.
- A.1.54 V. Janiš, *Incompleteness of the Thouless, Anderson, and Palmer mean-field description of the spin-glass phase*, Phys. Rev. B **74**, 054207 (2006) 1-12.
- A.1.53 V. Janiš and A. Klíč, *Hierarchical solutions of the Sherrington-Kirkpatrick model: Exact asymptotic behavior near the critical point*, Phys. Rev. B **74**, 054410 (2006) 1-9.
- A.1.52 V. Janiš and L. Zdeborová, *Thermodynamic origin of orderparameters in mean-field models of spin glasses*, Phys. Stat. Sol. **243** (2006) 716-31.
- A.1.51 V. Janiš and J. Kolorenč, *Mean-field theories for disordered electrons: Diffusion pole and Anderson localization*, Phys. Rev. B **71**, 245106 (2005) 1 - 11.
- A.1.50 V. Janiš and L. Zdeborová, *Replica trick with real replicas: A way to build in thermodynamic homogeneity*, Prog. Theor. Phys. Suppl. **157** (2005) 99 - 102.
- A.1.49 V. Janiš, *Stability of solutions of the Sherrington-Kirkpatrick model with respect to uniform scalings of extensive variables*, Phys. Rev. B **71**, 214403 (2005) 1 - 9.
- A.1.48 V. Janiš and J. Kolorenč, *Mean-field theory of Andersonlocalization: Asymptotic solution in high spatial dimensions*, Phys. Rev. B **71**, 033103 (2005) 1-4.
- A.1.47 V. Drchal, V. Janiš, J. Kudrnovský, V. S. Oudovenko, X. Dai, K. Haule, and G. Kotliar, *Dynamical correlations in multiorbital Hubbard models: Fluctuation-exchange approximations*, J. Phys.: Condens. Matter **17** (2005) 61-74.
- A.1.46 A. B. Shick, V. Janiš, and P. Oppeneer, *Effect of Coulomb correlations in the electronic structure of  $PuCoGa_5$* , Phys. Rev. Lett. **94**, 016401 (2005) 1-4.
- A.1.45 V. Janiš and J. Kolorenč, *Causality versus Ward identity in disordered electron systems*, Mod. Phys. Lett. B **18** (2004) 1051-8.
- A.1.44 V. Janiš and J. Kolorenč, *Conservation laws in disordered electron systems: Thermodynamic limit and configurational averaging*, Phys. stat. sol. (b) **241** (2004) 2032-42.
- A.1.43 A. B. Shick, V. Janiš, V. Drchal, and W. E. Pickett, *Spin and orbital magnetic state of  $UGe_2$  under pressure*, Phys. Rev. B **70**, 134506 (2004) 1-6.
- A.1.42 V. Janiš, J. Kolorenč, and V. Špička, *Density and current response functions in strongly correlated electron systems: diffusion, electrical conductivity and Einstein relation*, Eur. Phys. J. B **35** (2003) 77-91.
- A.1.41 V. Janiš, *Two-particle renormalizations in many-fermion perturbation theory: the importance of the Ward identity*, J. Phys. Condens. Matter **15** (2003) L311-7.
- A.1.40 V. Janiš, *Electron-hole resonant states in the  $d = \infty$  Hubbard model*, Physica B **312-313** (2002) 522-24.
- A.1.39 V. Drchal, V. Janiš, and J. Kudrnovský, *Multiband Hubbard Hamiltonians with exchange: Single-channel approximations*, Physica B **312-313** (2002) 519-21.
- A.1.38 V. Janiš, *Phase transitions with nonstandard critical behavior*, Acta Physica Polonica B **32** (2001) 3357-65.

- A.1.37 V. Janiš, *Parquet approach to nonlocal vertex functions and electrical conductivity of disordered electrons*, Phys. Rev. B **64** 115115 (2001) 1-16.
- A.1.36 V. Janiš and D. Vollhardt, *Conductivity of disordered electrons: mean-field approximation containing vertex corrections*, Phys. Rev. B **63** 125112 (2001) 1-7.
- A.1.35 V. Janiš, G. Czycholl, *Fluctuation-driven insulator-to-metal transition in an external magnetic field*, Phys. Rev. B **61** (2000) 9875-8.
- A.1.34 V. Drchal, V. Janiš, and J. Kudrnovský, *Dynamical electron correlations in weakly interacting systems: TB-LMTO approach to metals and random alloys*, Phys. Rev. B **60** (1999) 15664-73.
- A.1.33 V. Janiš, *Stability of self-consistent solutions for the Hubbard model at intermediate and strong coupling*, Phys. Rev. B **60** (1999) 11345-60.
- A.1.32 V. Janiš, *Asymptotic limit of high spatial dimensions and thermodynamic consistence of mean-field theories*, Phys. Rev. Lett. **83** (1999) 2781-4.
- A.1.31 V. Janiš, *Correlated electrons in an external magnetic field*, Physica B **259-61** (1999) 751-2.
- A.1.30 V. Janiš, *Hubbard model at intermediate coupling: Renormalization of interaction strength*, J. Phys: Condens. Matter **10** (1998) 2 915-32.
- A.1.29 V. Janiš, *Wiener-Hopf method applied to the x-ray edge problem*, Int. J. Mod. Phys. B **11** (1997) 3 433-53.
- A.1.28 V. Janiš, *The failure of Fermi-liquid theory at strong coupling*, J. Phys. C: Condensed Matter **8** (1996) L173-8.
- A.1.27 V. Janiš, *X-ray edge singularity: Fredholm versus Wiener-Hopf method*, Physica B **223-224** (1996) 616-618.
- A.1.26 V. Janiš and J. Schlipf, *Linked-cluster expansion around mean-field theories of interacting electrons*, Phys. Rev. B **52** (1995) 17 119-34.
- A.1.25 M. Ulmke, V. Janiš, and D. Vollhardt, *Anderson-Hubbard model in  $d = \infty$* , Phys. Rev. B **51** (1995) 10 411-26.
- A.1.24 V. Janiš, *Theory of soft x-ray spectra: Nonequilibrium dynamics of many electrons*, Acta Physica Slovaca **44** (1994) 391-402.
- A.1.23 P. G. J. van Dongen and V. Janiš, *Mott transition near the ferromagnetic state*, Phys. Rev. Lett. **72** (1994) 3 258-61, Phys. Rev. Lett. **73** (1994) 912.
- A.1.22 V. Janiš, M. Ulmke, and D. Vollhardt, *Metal-insulator transitions in the disordered Hubbard model*, Physica B **194-196** (1994) 1 069-70.
- A.1.21 V. Janiš and D. Vollhardt, *Analytically tractable mean-field theory for interacting electrons at strong coupling*, Physica B **194-196** (1994) 489-90.
- A.1.20 V. Janiš, *Green's function of the core electrons in a latticemodel for x-ray spectra: Break-down of perturbation theory in the long-time limit*, Phys. Rev. B **49** (1994) 1612-26.
- A.1.19 V. Janiš, M. Ulmke and D. Vollhardt, *Disorder vs. interaction in the Hubbard model: Phase diagram in infinite dimensions*, Europhysics Letters **24** (1993) 287-92.

- A.1.18 V. Janiš, *A lattice model for x-ray emission and absorption of metals: the edge singularity*, J. Phys.: Condens. Matter **5** (1993) L425-32.
- A.1.17 V. Janiš, J. Mašek and D. Vollhardt, *Construction of analytically tractable mean-field theories for quantum models. II Susceptibilities and energy bounds on the Hubbard model*, Z. Physik B **91** (1993) 325-36.
- A.1.16 V. Janiš and D. Vollhardt, *Construction of analytically tractable mean-field theories for quantum models. I General formalism with application to the Hubbard model at strong coupling*, Z. Physik B **91** (1993) 317-23.
- A.1.15 V. Janiš and D. Vollhardt, *Coupling of quantum degrees of freedom in strongly interacting, disordered electron systems*, Phys. Rev. B **46** (1992) 15 712-15.
- A.1.14 V. Janiš, F. Gebhard, R. Strack, and D. Vollhardt, *Comment on "Interacting-electron model exactly solvable in any dimension"*, Phys. Rev. Lett. **69** (1992) 2 443.
- A.1.13 V. Janiš and D. Vollhardt, *Comprehensive mean-field theory for the Hubbard model*, Int. J. Mod. Phys. B **6** (1992) 731-747.
- A.1.12 V. Janiš, *A new construction of thermodynamic mean-field theories of itinerant fermions: Application to the Falicov-Kimball model*, Z. Physik B **83** (1991) 227-35.
- A.1.11 V. Janiš, *Mean-field theory for spin glasses with many macroscopic states*, Phys. Status Solidi (b) **157** (1990) 425-30.
- A.1.10 V. Janiš, *Free-energy functional in the generalized coherent-potential approximation*, Phys. Rev. B **40** (1989) 11 331-4.
- A.1.9 V. Janiš,  *$U = \infty$  Hubbard model: Towards the exact solution in  $d = \infty$* , Int. J. Mod. Phys. B **3** (1989) 2 149-57.
- A.1.8 V. Janiš, *On the mean-field spin-glass instability at finite fields*, J. Phys. A: Math. Gen. **20** (1987) L1017-22.
- A.1.7 J. Mašek, B. Velický and V. Janiš, *A tight-binding study of MnTe*, J. Phys. C: Solid State **20** (1987) 59-68.
- A.1.6 V. Janiš, *Diagrammatic expansion and metastability in the random-field Ising model*, J. Stat. Phys. **47** (1987) 931-8.
- A.1.5 J. Mašek, B. Velický and V. Janiš, *Electronic structure of the paramagnetic MnTe*, Acta Phys. Polonica A **69** (1986) 1 107-10.
- A.1.4 V. Janiš, *The effect of higher-order cumulants in the random-field Ising model*, Phys. Status Solidi (b) **138** (1986) 539-46.
- A.1.3 V. Janiš, *A self-consistent approximation for the random-field Ising model: Phase diagram in  $d > 3$* , Phys. Status Solidi (b) **134** (1986) 141-6.
- A.1.2 J. Bičák and V. Janiš, *Magnetic fluxes across black holes*, Month. Not. Roy. Astr. Soc. **212** (1985) 899-915.
- A.1.1 V. Janiš, J. Souček and V. Souček, *Operator formalism equivalent to the Feynman quantization technique*, J. Math. Phys. **24** (1983) 834-8.

## A.2 Papers in local research journals

- A.2.6 V. Janiš and R. Teplý *The role of two-particle correlations in strongly interacting electron systems*, Czech. J. Phys. B **46** (1996) 2 633-4.
- A.2.5 V. Janiš and J. Mašek, *New interpretation of Parisi-Sompolinsky mean-field solution for spin glasses*, Czech. J. Phys. B **41** (1991) 359-72.
- A.2.4 V. Janiš, *Feynman quantization: An operator approach to path integration over commuting and anticommuting variables*, Czech. J. Phys. B **40** (1990) 836-56.
- A.2.3 V. Janiš, K. Král and J. Mašek, *An expansion method for the Monte-Carlo distribution function*, Czech. J. Phys. B **38** (1988) 1 394-1 404.
- A.2.2 V. Janiš, *Renormalized expansions for functional integrals: Generalized coherent-potential approximation*, Czech. J. Phys. B **36** (1986) 1 107-29.
- A.2.1 V. Janiš, *Boundary conditions, symmetry breakdown and Feynman path integral*, Czech. J. Phys. B **32** (1982) 657-60.

## A.3 Papers in proceeding of international research conferences

- A.3.12 M. Ringel and V. Janiš, *Strong electron correlation in impurity models: singlet and triplet multiple scatterings*, in LECTURES ON THE PHYSICS OF STRONGLY CORRELATED SYSTEMS XIII, AIP Conference Proceedings Volume 1162, (F. Mancini and A. Avella eds.) 2009, pp. 215-9.
- A.3.11 V. Janiš and P. Augustinský, *A diagrammatic solution of the single-impurity Anderson model in the Kondo regime*, in LECTURES ON THE PHYSICS OF STRONGLY CORRELATED SYSTEMS XI: Eleventh Training Course in the Physics of Strongly Correlated Systems, AIP Conference Proceedings Volume 918, (F. Mancini and A. Avella eds.) 2007, pp. 272-6.
- A.3.10 A. B. Shick, V. Janiš, V. Drchal, and W. E. Pickett, *Pressure dependence of magnetic states*, in Proceedings of Mat. Res. Soc., Vol. **802**, 2004, DD6.10.1-6.
- A.3.9 V. Drchal, V. Janiš, and J. Kudrnovský, *Electron correlations in disordered alloys and at metallic surfaces*, in Electron Correlations and Material Properties, (A. Gonis, M. Kioussis, and M. Ciftan eds.), Kluwer Academic, New York 2003, pp. 341-354.
- A.3.8 V. Janiš, *Quantum critical behavior of correlated electrons: Resonant states*. In Open Problems in Strongly Correlated Electron Systems, (J. Bonča, P. Prelovšek, A. Ramšak, and S. Sarkar eds.), NATO Science Series, Kluwer Academic, Dordrecht 2001, pp. 361 - 70.
- A.3.7 M. Ulmke, P. J. H. Denteneer, V. Janiš, R. T. Scalettar, A. Singh, D. Vollhardt, and G. Zimanyi, *Disorder and impurities in Hubbard-antiferromagnets*. In Advances of Solid State Physics, vol. **38**, (B. Kramer ed.), Vieweg, Wiesbaden 1999, pp. 369-381.
- A.3.6 V. Drchal, V. Janiš, and J. Kudrnovský, *Dynamical electron correlations in metals: TB-LMTO and Multiband Hubbard model*. Electron Correlations and Materials Properties, (A. Gonis, N. Kioussis, and M. Ciftan eds.) Kluwer/Plenum, New York 1999, pp. 273-84.
- A.3.5 V. Janiš, *Strongly correlated electrons: Dynamical vertex renormalization*. In Electron Correlations and Materials Properties (A. Gonis, N. Kioussis, and M. Ciftan eds.) Kluwer/Plenum, New York 1999, pp. 519-30.

- A.3.4 V. Janiš, *Parquet diagrams in the critical region of the Mott metal-insulator transition*. In *Recent Progress in Many-Body Theories*, (D. Neilson and R. F. Bishop eds.), World Scientific, Singapore 1998, pp 489-92.
- A.3.3 V. Janiš, M. Ulmke, and D. Vollhardt, *The Hubbard model with local disorder in  $d = \infty$* . In *The Hubbard model*, (D. Baeriswyl et al eds.), Plenum Press, New York, 1995, pp. 167-174.
- A.3.2 V. Janiš, *A functional-integral generalization of the coherent-potential approximation*. In *Path Summation: Achievements and Goals*, (S. Lundquist, A. Ranfagni, V. Sa-yakanit, and L. S. Schulman eds.) World Scientific, Singapore 1988, pp. 307-26.
- A.3.1 V. Janiš, *Many-body approach to the coherent-potential approximation*. In *Localization in Disordered Systems*, (W. Weller and P. Ziesche eds.), Teubner, Leipzig 1988, pp.141-5.

#### A.4 Papers in proceedings of national research conferences

- A.4.3 V. Pokorný and V. Janiš, *Vertex Corrections to the Electrical Conductivity of the Disordered Falicov-Kimball Model*, Proceedings of the 19th Annual Conference of Doctoral Students - WDS 2010, eds. J. Šafránková and J. Pavlu, (Matfyzpress, Prague 2010), pp. 134-7.
- A.4.2 V. Janiš, *Strongly correlated electrons- New methods for investigating quantum critical phenomena*, Proceedings of the 14<sup>th</sup> Conference of Czechoslovak Physicists, eds. P. Baroch, M. Kubásek and Š. Potocký (University of West Bohemia, Plzeň 2002), pp. 113-1 24.
- A.4.1 V. Janiš, *Mean-field theory of spin glasses*. Proceedings of the 9th Conference of Czechoslovak physicists, Pardubice 1987, pp. 291-4.

## B Preprints

- B.0.5 V. Janiš and J. Kolorenč, *Absence of the diffusion pole in the Anderson insulator*, e-print *cond-mat/0407618*..
- B.0.4 V. Janiš, *Generating functional for the full parquet approximation*, e-print *cond-mat/9806118*.
- B.0.3 V. Janiš, *Towards analytic description of a transition from weak to strong coupling regime in correlated electron systems: Systematic diagrammatic theory with two-particle Green functions*. e-print *cond-mat/9704076*.
- B.0.2 V. Janiš, *Complete Wiener-Hopf solution solution of the x-rayedge problem*. Preprint ISSP (Tokyo) A3146 and e-print *cond-mat/9606071*.
- B.0.1 V. Janiš, *Functional integral in quantum theory*. (in Czech) Preprint, Institute of Physics CSAV **84-4**.

## C Articles in Czech

- C.0.4 V. Janiš, *Cooperative behaviour of interacting electrons and macroscopic quantum coherence in metals*, Czech. J. Phys. **A57** (2007) 298-308.
- C.0.3 V. Janiš and J. Kolorenč, *Statistical randomness in metallic materials: Electrical resistance, diffusion, and electron localization*, Czech. J. Phys. **A55** (2005) 316-20.

C.0.2 V. Janiš, J. Mašek and B. Velický, *Department of Condensed Matter Theory*, Czech. J. Phys. **A53** (2003) 248-51

C.0.1 V. Janiš, *Path and functional integral in quantum theory*, Czech. J. Phys. **A35** (1985) 448-67.

## **D Dissertations**

D.0.3 *Self-Consistent and Nonperturbative Approximations for Correlated Electrons*, habilitation thesis, Charles University, Prague 2000. Commented collection of related published papers.

D.0.2 *The Limit of High Spatial Dimensions as a Means for the Construction of Comprehensive Mean-Field Theories*, DSc thesis, Charles University, Prague 1995. Appendix contains reprinted selected published papers of the author.

D.0.1 *Operator approach to Feynman path integral and its application in quantum physics*, PhD thesis (in Czech), Charles University, Prague 1983.