



Chair of  
Theoretical Physics I  
University of Würzburg

---

## **Publications of Werner Hanke**

Last update: 16.09.2026

---

- [1] W. Hanke and H. Bross, *Electron-Phonon Interaction and Damping of Phonons in Simple Metals. Application to Aluminium*, Phys. Cond. Matt. **13**, 203 (1971).
- [2] W. Hanke and H. Bilz, *Shell-Model Treatment of Phonons in Metals*, Zeitschrift für Naturforschung **26a**, 585 (1971).
- [3] W. Hanke, *Modified Shell-Model Treatment of Phonons in Noble and Transition Metals*, Proceedings in the book: “Phonons”, edited by M.A. Nusimovici, p. 294, Flammarion Press, Paris (1971).
- [4] W. Hanke and H. Bilz, *Phonons in Metals*, Review Article in the book: “Inelastic Scattering of Neutrons”, p. 3, International Atomic Energy Agency, Wien (1972).
- [5] W. Hanke, *Microscopic Theory of Dielectric Screening and Lattice Dynamics in the Wannier Representation. I. Theory*, Physical Review B **8**, 4585 (1973).
- [6] W. Hanke, *Microscopic Theory of Dielectric Screening and Lattice Dynamics in the Wannier Representation. II. Model, Application to the Transition Metals Pd and Ni*, Physical Review B **8**, 4591 (1973).
- [7] W. Hanke and L.J. Sham, *Dielectric Response in the Wannier Representation: Application to the Optical Spectrum of Diamond*, Phys. Rev. Lett. **33**, 582 (1974).
- [8] H. Bilz, B. Gliss and W. Hanke, *Theory of Phonons in Ionic Crystals*, Review Article in the book: “Dynamical Properties of Solids”, edited by G.K. Horton and A.A. Maradudin, volume 1, p. 343, North-Holland (1974).
- [9] W. Hanke, *Microscopic Theory of Electron-Phonon Coupling and of Lattice Dynamics in Transition Metals*, Proceedings of the “Vth Int. Symp. Electr. Struct. of Metals”, edited by the TU Dresden, p. 88, (1975).
- [10] W. Hanke and L.J. Sham, *Local-Field and Excitonic Effects in the Optical Spectrum of a Covalent Crystal*, Phys. Rev. B **12**, 4501 (1975).
- [11] E. Petri, A. Otto and W. Hanke, *Anisotropy of Plasmon Dispersion in Al: An Electron Correlation Effect*, Solid State Commun. **19**, 711 (1976).

- [12] C.H. Wu and W. Hanke, *Surface Dielectric Response in Covalent Semiconductors*, Proceedings of the “13th Int. Conf. Phys. of Semiconductors”, edited by F. Fumi, p. 690, (1976).
- [13] W. Kohn and W. Hanke, *Nonlocal Correlations in the Exchange and Correlation Energy of an Inhomogeneous Electron Gas*, Workshop Rep. on One-Electron Ab-Initio Potentials at “CECAM”, edited by C. Moser, p. 143, (1976).
- [14] W. Hanke, J. Hafner and H. Bilz, *Phonon Anomalies and Superconductivity in Transition-Metal Compounds*, Phys. Rev. Lett. **37**, 1560 (1976).
- [15] W. Hanke, J. Hafner and H. Bilz, *Microscopic Theory of Phonon Anomalies in Superconductors*, Ferroelectrics **16**, 178 (1977).
- [16] J. Bar-Sagi and W. Hanke, *Local-Field Effects on the Superconducting Transition Temperature*, Ferroelectrics **16**, 241 (1977).
- [17] C.H. Wu and W. Hanke, *Theory of Surface-Dielectric Response in a Local Representation*, Solid State Commun. **22**, 601 (1977).
- [18] J. Hafner, W. Hanke and H. Bilz, *p-d Hybridization, Incipient Lattice Instabilities and Superconductivity in Transition-Metal Compounds*, in the book: “Electron-Phonon Interactions and Phase Transitions”, p. 200, Plenum Press, London (1977).
- [19] W. Hanke and H.C. Wu, *Electronic Perturbations of Transition-Metal Surfaces*, Inst. Phys. Conf. Series **39**, 337 (1978).
- [20] J. Hafner and W. Hanke, *Role of p-d Hybridization on Electronically Driven Lattice Instabilities*, Proceedings in the book: “Lattice Dynamics”, edited by M. Balkanski, p. 213, Flammarion Press (1978).
- [21] W. Hanke and C.H. Wu, *Surface Lattice Dynamics and Density Response*, in the book: “Lattice Dynamics”, edited by M. Balkanski, p. 292, Flammarion Press (1978).
- [22] W. Hanke, *Dielectric Theory of Elementary Excitations in Crystals*, Adv. in Physics **27**, 287 (1978).
- [23] W. Hanke and A. Muramatsu, *Dynamical Theory of Surface Reconstruction*, Inst. Phys. Conf. Series **43**, 657 (1979).
- [24] W. Hanke and L.J. Sham, *Continuum-Exciton Effect in the Optical Spectrum of a Semiconductor*, Inst. Phys. Conf. Series **43**, 1367 (1979).
- [25] R. d.Sole and W. Hanke, *Non-Orthogonal Tight-Binding Approach to Surface States of Covalent Semiconductors*, Solid State Commun. **31** (1979).
- [26] W. Hanke and L.J. Sham, *Many-Particle Effects in the Optical Excitations of a Semiconductor*, Phys. Rev. Lett. **43**, 387 (1979).
- [27] C.H. Wu and W. Hanke, *Local-Orbital Description of Surface Electronic Response. Model Application to Transition Metals*, MPI Ser. No **7831** (1979).
- [28] W. Kohn and W. Hanke, *Short- and Long Wavelength Contributions to the Exchange-Correlation*, Proceedings of “CECAM”, edited by C. Moser, (1979).

- [29] W. Hanke, *The Role of Electron-Hole Interaction in the Optical Spectra of Semiconductors and Insulators*, Review Article in the book: “Festkörperprobleme XIX / Adv. in Solid State Physics”, p. 43, Vieweg (1979).
- [30] K. Arya and W. Hanke, *Coulomb Effects on the Gain and Absorption Spectra of the Electron-Hole Plasma in GaAs*, Solid State Commun. **33**, 739 (1980).
- [31] W. Hanke and A. Muramatsu, *The Pairing Interaction in Surface Superconductivity*, in the book: “Superconductivity in d- and f-Band Metals”, edited by B. Maple and H. Suh, p. 201, Academic (1980).
- [32] G. Strinati, H.J. Mattausch and W. Hanke, *Dynamical Correlation Effects on the Quasiparticle Bloch States of a Covalent Crystal*, Phys. Rev. Lett. **45**, 290 (1980).
- [33] W. Hanke and M.J. Kelly, *Surface Superconductivity and the MOS System*, Phys. Rev. Lett. **45**, 1203 (1980).
- [34] W. Hanke and L.J. Sham, *Many-Particle Effects in the Optical Excitation of a Semiconductor*, Phys. Rev. B **21**, 4656 (1980).
- [35] G. Strinati, H.J. Mattausch and W. Hanke, *First-Principle Calculation of Self-Energy Corrections in Covalent Crystals*, J. Phys. Japan **49**, 77, Suppl. A (1980).
- [36] W. Hanke and M.J. Kelly, *Mechanisms of Superconductivity at Semiconductors Interfaces*, J. Phys. Japan **49**, 991, Suppl. A (1980).
- [37] W. Hanke, G. Strinati and H.J. Mattausch, *Dynamical Correlation Effects on the One-Electron States of Covalent Crystals*, Review Article in the book: “Recent Developments in Condensed Matter Physics”, edited by J.T. Devreese, volume I, p. 63, Plenum (1981).
- [38] M.J. Kelly and W. Hanke, *Surface Superconductivity and the Metal-Oxide-Semiconductor (MOS) System*, Phys. Rev. B **23**, 112 (1981).
- [39] M.J. Kelly and W. Hanke, *Electron-Phonon Interaction at a Silicon Surface*, Phys. Rev. B **23**, 924 (1981).
- [40] L.M. Falicov, W. Hanke and M.B. Maple, editors of the book *Valence Fluctuations in Solids*, North-Holland, (1981).
- [41] J. Hirsch and W. Hanke, *Real-Space Renormalization-Group Study of a Fluctuating Valence Model*, in the book: “Valence Fluctuations in Solids”, edited by L. Falicov, W. Hanke and M.B. Maple, p. 363, North-Holland (1981).
- [42] A. Arya and W. Hanke, *Many-Body Coulomb Effects on the Gain and Absorption Line Shapes of the Electron-Hole Plasma in GaAs*, Phys. Rev. B **23**, 2988 (1981).
- [43] A. Muramatsu and W. Hanke, *Microscopic Theory of Lattice Dynamics and Reconstruction of Semiconductor Surfaces*, J. de Physique C **6**, 834 (1981).
- [44] G. Strinati, H.J. Mattausch and W. Hanke, *Dynamical Aspects of Correlation Corrections in Covalent Crystals*, Phys. Rev. B **25**, 2867 (1982).

- [45] W. Hanke and J. Hirsch, *Renormalization-Group Studies of a Concentrated Fluctuating Valence Model*, Phys. Rev. B **25**, 6748 (1982).
- [46] H.J. Mattausch, G. Strinati and W. Hanke, *Many-Body Effects in the Screening of Impurities in Covalent Crystals*, Phys. Rev. B **26**, 2302 (1982).
- [47] W. Hanke, M.J. Kelly and A. Muramatsu, *On the Possibility of Stress-Induced Superconductivity in the Si(100)/SiO<sub>2</sub> Inversion Layer*, Surf. Science **113**, 256 (1982).
- [48] A. Muramatsu and W. Hanke, *Electron-Phonon Interaction and the Metal-Insulator Transition of the Si(111) Surface*, Solid State Comm. **42**, 537 (1982).
- [49] D. Schmeltzer and W. Hanke, *Renormalization Group Method for the Polaron Effect in the Hubbard Hamiltonian*, J. Phys. C **15**, L 1131 (1982).
- [50] A. Muramatsu and W. Hanke, *Magnetic Instabilities at Semiconductor Surfaces*, Phys. Rev. B **27**, 2609 (1983).
- [51] H.J. Mattausch, W. Hanke and G. Strinati, *Impurities in Covalent Crystals: Exchange-Correlation and Local-Field Effects*, Phys. Rev. B **27**, 3705 (1983).
- [52] A. Muramatsu and W. Hanke, *Theory of Electron-Phonon Interaction and its Influence on Reconstruction of Semiconductor Surfaces*, in the book: “Ab-Initio Calculations of Phonons”, edited by J.T. Devreese, p. 241, Plenum (1983).
- [53] W. Hanke, H.J. Mattausch and G. Strinati, *Exchange-Correlation Effects in the Electronic Single- and Two-Particle Excitations of Covalent Crystals*, in the book: “Electron Correlations in Solids, Molecules and Atoms”, edited by J.T. Devreese and F. Brosens, p. 289, Plenum (1983).
- [54] S. Das Sarma and W. Hanke, *Comments of the “Time-Dependent Hartree-Fock Formalism for the Two-Particle Green’s Function”*, Phys. Rev. B **28**, 1134 (1983).
- [55] R. Liebmann, D. Schmeltzer and W. Hanke, *Influence of Quantum Fluctuations on the 1-D Hubbard Model Coupled to a Local Bose System: Scaling Theory*, MPI Ser. No **14211** (1983).
- [56] W. Hanke and D. Schmeltzer, *Polaronic Effects in Fluctuating Valence Solids: A Renormalization-Group Study*, Phys. Rev. B **28**, 4056 (1983).
- [57] N. Meskini, W. Hanke and H.J. Mattausch, *Many-Body Effects in the Absorption Spectrum of a Heteropolar Crystal*, Solid State Commun. **48**, 807 (1983).
- [58] A. Muramatsu and W. Hanke, *Charge- and Spin-Density Wave Instabilities on Semiconductor Surfaces*, Physics 117B & 118B, 781 (1983).
- [59] A. Muramatsu and W. Hanke, *Electronic collective modes and instabilities on semiconductor surfaces. I*, Phys. Rev. B **30**(4), 1911–1921 Aug (1984).
- [60] A. Muramatsu and W. Hanke, *Electronic collective modes and instabilities on semiconductor surfaces. II. Theory of electron-phonon interaction*, Phys. Rev. B **30**(4), 1922–1928 Aug (1984).

- [61] H. Weiler, N. Meskini, W. Hanke and M. Altarelli, *Binding energies of substitutional and interstitial donors in Si: Many-electron effects*, Phys. Rev. B **30**(4), 2266–2269 Aug (1984).
- [62] W. Hanke, Th. Götzler and H.J. Mattausch, *Exchange-Correlation Potential for One-Electron Excitation in a Semiconductor*, Solid State Commun. **51**, 23 (1984).
- [63] W. Hanke and A. Muramatsu, *Theory of Electron-Phonon Interaction and Broken Symmetries of Semiconductor Interfaces*, J. de Physique C **6**, 385 (1984).
- [64] N. Meskini, W. Hanke and H.J. Mattausch, *The Absorption Spectrum of a Heteropolar Crystal: The Role of Many-Particle Effects*, J. de Physique **45**, 1707 (1984).
- [65] A. Muramatsu and W. Hanke, *Theory of Elementary Excitations and the Metal-Insulator Transition on Semiconductor Surfaces*, Phys. Reports **113**, 98 (1984).
- [66] W. Hanke, *Dynamical Correlation Effects on the Quasi-Particle Bloch States of a Semiconductor*, Proceedings of: “Int. Conf. Phys. of Semicond.”, p. 1005, Springer, New York (1985).
- [67] W. Hanke, N. Meskini and H. Weiler, *Exchange-Correlation Potential for the Quasi-Particle Bloch States of a Semiconductor*, in the book: “Electronic Structure”, edited by J.T. Devreese and P.V. Camp, p. 113, Plenum (1985).
- [68] G. Vignale and W. Hanke, *Self-Consistent Green’s Function Theory for interacting Electrons in a Random Potential*, Zeitschr. f. Phys. B **60**, 393 (1985).
- [69] A. Muramatsu and W. Hanke, *Many-Body Interactions and Dynamical Properties of Semiconductor Surfaces*, Proceedings of: “2nd Int. Conf. Phonon Physics”, edited by Kroo Kollar and Siklos Meynhard, p. 617, World Scientific (1985).
- [70] W. Hanke, *Phase Diagram of One-Dimensional Electron-Phonon and Relativistic Field-Theory Models: Renormalization-Group Studies*, in “Lecture Notes in Physics 249”, Springer, Berlin/New York.
- [71] D. Schmeltzer, R. Zeyher and W. Hanke, *Effect of quantum fluctuations on one-dimensional electron-phonon systems: The Su-Schrieffer-Heeger model*, Phys. Rev. B **33**(7), 5141–5144 Apr (1986).
- [72] G. Vignale, Y. Shinozuka and W. Hanke, *Effect of quantum hopping on the Coulomb gap of localized electrons in disordered systems*, Phys. Rev. B **34**(4), 3003–3006 Aug (1986).
- [73] A. Muramatsu and W. Hanke, *Monte-Carlo Simulation of a Hubbard Chain with Disorder*, Physica Scripta **T 13**, 319 (1986).
- [74] W. Hanke and L.J. Sham, *Density-Functional Theory in Semiconductors. Construction and Test of an Analytical Exchange-Correlation Potential*, in “18th Int. Conf. Phys. of Semicond. Vol. II”, edited by O. Engstrom.
- [75] G. Vignale, W. Hanke and Y. Shinozuka, *Many-Body Theory of Electronic Excitations in Disordered Semiconductors*, in “18th Int. Conf. Phys. of Semicond. Vol. II”, edited by O. Engstrom.

- [76] G. Vignale and W. Hanke, *Many-body theory of electronic excitations in random substitutional alloys I: Formalism*, Z. Phys. B **69**, 193 (1987).
- [77] G. Vignale and W. Hanke, *Many-body theory of electronic excitations in random substitutional alloys II: A model application*, Z. Phys. B **69**, 209 (1987).
- [78] A. Muramatsu and W. Hanke, *Many-Body Description of Surface Elementary Excitations. Application to Semiconductors*, Review in “Topics in Current Phys.”, volume 43, Springer, Berlin/New York (1987).
- [79] G. Vignale and W. Hanke, *Altshuler-Aronov anomalies in the density of states of substitutional alloys*, Phys. Rev. B **36**(5), 2924–2927 Aug (1987).
- [80] A. Muramatsu and W. Hanke, *Electron-phonon coupling in the two-dimensional hubbard model: A monte carlo study*, Phys. Rev. B **38**(1), 878–880 Jul (1988).
- [81] A. Muramatsu and W. Hanke, *Electron-Phonon Coupling and Pairing in the 2-D Hubbard Model: A Monte-Carlo Study*, Physica C **153-155**, 229 (1988).
- [82] L. Lilly, A. Muramatsu and W. Hanke, *Effective Interactions mediated by 1-D Chains: A Model for 1-2-3 Superconductors*, Physica C **153**, 1187 (1988).
- [83] W. Hanke and L.J. Sham, *Density-functional theory in insulators: Analytical model for  $\epsilon_{xc}$ ,  $v_{xc}$ , and the gap correction*, Phys. Rev. B **38**(18), 13361–13370 Dec (1988).
- [84] W. Hanke, L. Lilly and A. Muramatsu, *Theory of High-Temperature Superconductors: Field-Theoretical and Monte-Carlo Studies*, in “Progress in High Temperature Superconductivity Vol. 9”, Springer, World Scientific.
- [85] W. Hanke and L.J. Sham, *Analytical Model for Self-Energy Operators and Exchange-Correlation Potentials in Non-Metals*, Solid State Comm. **71**, 211 (1989).
- [86] A.G. Eguiluz and W. Hanke, *Evaluation of the exchange-correlation potential at a metal surface from many-body perturbation theory*, Phys. Rev. B **39**(14), 10433–10436 May (1989).
- [87] G. Dopf, A. Muramatsu and W. Hanke, *Monte-Carlo Simulation for CuO<sub>2</sub> Layers: 3-Band Hubbard Model*, Stanford Conference, Physica C **162-164**, 807 (1989).
- [88] J. Wagner, R. Putz, B. Ehlers, L. Lilly, A. Muramatsu and W. Hanke, *Weak- and Strong-Coupling Expansions for the Multi-Band Hubbard Model*, Stanford Conference, Physica C **162-164**, 811 (1989).
- [89] O. Gunnarsson, P. Gies, W. Hanke and O.K. Andersen, *Ab initio method for calculating response functions in transition metals*, Phys. Rev. B **40**(18), 12140–12146 Dec (1989).
- [90] A.G. Eguiluz, W. Hanke, P. Gies and M. Heinrichsmeier, *Non-Local Exchange-Correlation Potential at a Metal Surface from Many-Body Perturbation Theory*, Vacuum (1990).
- [91] J. Wagner, R. Putz, G. Dopf, B. Ehlers, L. Lilly, A. Muramatsu and W. Hanke, *Generalized Hubbard Models for Cu-O-Based Superconductors: Field-Theoretical and Monte-Carlo Results*, in “Earlier and Recent Aspects of Superconductivity (Springer Series in Solid-State Sciences)”, edited by J.G. Bednorz and K.A. Müller, volume 90, Springer, Berlin/New York (1990).

- [92] G. Dopf, A. Muramatsu and W. Hanke, *Monte-Carlo Simulation of a Three-Band Hubbard Model for CuO<sub>2</sub> Layers*, in “Workshop on Quantum Simulations of Condensed Matter Phenomena”, edited by J. Doll and J. Gubernatis, p. 71, World Scientific, Singapore (1990).
- [93] R. Putz, B. Ehlers, L. Lill, A. Muramatsu and W. Hanke, *Superconducting Pairing of the Extended Hubbard Model: A Weak-Coupling Study*, Phys. Rev. B **41**, 853 (1990).
- [94] U. Wulf, E. Zeeb, P. Gies, R.R. Gerhardtts and W. Hanke, *Magnetoplasmon Excitations in a Periodically Modulated Two-Dimensional Electron-Gas*, Phys. Rev. B **41**, 3113 (1990).
- [95] G. Dopf, A. Muramatsu and W. Hanke, *Three-Band Hubbard-Model: A Monte-Carlo Study*, Phys. Rev. B **41**, 9264 (1990).
- [96] J. Wagner, A. Muramatsu and W. Hanke, *Charge-Transfer and Magnetic Pairing Mechanisms in the Extended Hubbard Model of High-T<sub>c</sub> Oxides*, Phys. Rev. B **42**, 2200 (1990).
- [97] U. Wulf, E. Zeeb, P. Gies, R.R. Gerhardtts and W. Hanke, *Magnetoplasmons in an Electron Gas at the Crossover from Two- to One-Dimensional Behavior*, Phys. Rev. B **42**, 7637 (1990).
- [98] U. Wulf, E. Zeeb, P. Gies, R.R. Gerhardtts and W. Hanke, *Magnetoplasmon Spectrum in Periodically Modulated Two-Dimensional Electron Gases*, Proceedings of “20th Int. Conf. Physics of Semiconductors”, edited by E.M. Anastassakis and J.D. Joannopoulos, p. 2407, World Scientific, Singapore (1990).
- [99] L. Lilly, A. Muramatsu and W. Hanke, *Slave-Boson Mean Field versus Quantum Monte Carlo Results for the Hubbard Model*, Phys. Rev. Lett. **65**, 1379 (1990).
- [100] David M. Frenkel and W. Hanke, *Spirals and Spin Bags: A link between the weak- and strong-coupling limits of the Hubbard model*, Phys. Rev. B **42**, 6711 (1990).
- [101] L. Lilly, A. Muramatsu and W. Hanke, *Numerical Study of Slave Boson Mean Field Equations for the Hubbard Model*, Physica B **165 - 166**, 393 (1990).
- [102] G. Dopf, T. Kraft, A. Muramatsu and W. Hanke, *Charge-Transfer Gap from a Monte Carlo Simulation of the three-band Hubbard model*, Physica B **165 - 166**, 1015 (1990).
- [103] W. Hanke, *The 3-Band Hubbard model: A Monte-Carlo Study*, Proceedings of the workshop “Physics at HLRZ”, edited by M. Kremer, p. 25, KFA press, Jülich (1990).
- [104] J. Wagner, W. Hanke and D.J. Scalapino, *Optical-, Magnetic-, and Single-Particle Excitations in the Multiband Hubbard Model for Cuprate Superconductors*, Phys. Rev. B **43**, 10517 (1990).
- [105] S. Schohe, R. Oppermann and W. Hanke, *Matrix Field Theory for Disordered Local Pairing Superconductors with Two Glass Order Parameters and Spin-Flip Pairbreaking*, Z. Physik B (1991).
- [106] G. Dopf, A. Muramatsu and W. Hanke, *Normal State and Superconducting Properties of the Three-Band Hubbard Model From Quantum Monte Carlo Simulations*, Physica C **185-189**, 1495 (1991).

- [107] J. Wagner, W. Hanke and D.J. Scalapino, *Optical and Single-Particle Excitations in the Multiband Hubbard Model for Cuprate Superconductors*, Physica C **185-189**, 1617 (1991).
- [108] W. Hanke, A. Muramatsu and G. Dopf, *Das Jülicher Computer-Projekt: Neue Erkenntnisse über die Hochtemperatur-Supraleitung*, Phys. Blätter **47**(12), 1061 (1991).
- [109] L. Lilly, A. Muramatsu and W. Hanke, *Slave-Boson Results for Experimental Observables*, Physica C **185-189**, 1615 (1991).
- [110] R.M. Fye, M.J. Martins, D.J. Scalapino, J. Wagner and W. Hanke, *Drude weight, optical conductivity, and flux properties of one-dimensional Hubbard rings*, Phys. Rev. B **44**, 6909 (1991).
- [111] R.M. Fye, M.J. Martins, D.J. Scalapino, J. Wagner and W. Hanke, *Optical-conductivity properties of one-dimensional Hubbard rings: Repulsive- $U$  und attractive- $U$  cases*, Phys. Rev. B **45**, 7311 (1992).
- [112] G. Dopf, A. Muramatsu and W. Hanke, *Consistent description of high  $T_c$  superconductors from quantum Monte Carlo simulations*, Proceedings of the International Workshop “Electronic Properties and Mechanisms of High  $T_c$  Superconductors (Tsukuba, Japan, 1991)”, edited by T. Oguchi, K. Kadowaki and T. Sasaki, p. 255–259, North-Holland, Amsterdam, Netherlands (1992).
- [113] G. Dopf, A. Muramatsu and W. Hanke, *Quantum Monte Carlo Simulations for the three-band Hubbard Model*, Journal of Modern Physics C **3**, 72 (1992).
- [114] G. Dopf, J. Wagner, P. Dieterich, A. Muramatsu and W. Hanke, *Quantum-Monte-Carlo Studies of Superconductivity in Strongly Correlated Systems*, Helvetica Phys. Acta **65**(2/3), 257 (1992).
- [115] G. Dopf, J. Wagner, P. Dieterich, A. Muramatsu and W. Hanke, *Single-Particle Spectrum for High- $T_c$  Superconductors: A Numerical Study*, Helvetica Phys. Acta **65**(2/3), 431 (1992).
- [116] R. Putz, P. Dieterich and W. Hanke, *Conserving Approximation for the Multi-Band Hubbard Model*, Helvetica Phys. Acta **65**(2/3), 433 (1992).
- [117] A. Eguiluz, J.J. Deisz, M. Heinrichsmeier, A. Fleszar and W. Hanke, *Towards a first-principle implementation of density-functional theory at a metal surface*, Proceedings of Sanibel Symposium on “Density Functional Theory (Florida, 1992)”, p. 837–852, Intern. Journal of Quantum Chemistry (1992).
- [118] A. Muramatsu, G. Dopf, J. Wagner, P. Dieterich and W. Hanke, *Quantum-Monte-Carlo Simulations for High- $T_c$  Superconductors*, Festkörperprobleme, Adv. in Solid State Physics (1992).
- [119] J.J. Deisz, A. Eguiluz and W. Hanke, *The Surface Barrier for a Simple Metal: A First Principles Comparison Between Density Functional Theory and Self-Energy Calculations*, Invited Talk Delivered at the 14th Werner Brandt Workshop on “Charged Particle Penetration Phenomena (Oak Ridge, Tennessee, 1992)”.
- [120] G. Dopf, A. Muramatsu and W. Hanke, *Antiferromagnetism and incommensurate structures in the three-band Hubbard model*, Europhys. Lett. **17**, 559 (1992).

- [121] W. Hanke and Y.V. Kopaev, editors of the book *Electronic Phase Transitions*, in the series: Modern Problems in Condensed Matter Science, North-Holland, (1992).
- [122] G. Dopf, A. Muramatsu and W. Hanke, *Consistent description of high- $T_c$  superconductors with the three-band Hubbard model*, Phys. Rev. Lett. **68**, 353 (1992).
- [123] G. Dopf, J. Wagner, P. Dieterich, A. Muramatsu and W. Hanke, *Direct comparison of angle-resolved photoemission and numerical simulations for high- $T_c$  superconductors*, Phys. Rev. Lett. **68**, 2082 (1992).
- [124] A.G. Eguiluz, M. Heinrichsmeier, A. Fleszar and W. Hanke, *First-principles evaluation of the surface barrier for a Kohn-Sham Electron at a metal surface*, Phys. Rev. Lett. **68**, 1369 (1992).
- [125] G. Dopf, J. Wagner, P. Dieterich, A. Muramatsu and W. Hanke, *Consistent Description of High- $T_c$  Superconductors with the 3-Band Hubbard Model: Quantum-Monte-Carlo Studies*, Proceedings on “IWEPS (Kirchberg, 1992)”, Springer Series of Sol. St. Science (1993).
- [126] L. Lilly, A. Muramatsu and W. Hanke, *Comment on “Slave-Boson mean field versus quantum Monte Carlo results for the Hubbard model”*, Phys. Rev. Lett. **71**, 2049 (1993).
- [127] J.J. Deisz, A.G. Eguiluz and W. Hanke, *Quasiparticle theory vs. density-functional theory at a metal surface*, Phys. Rev. Lett. **71**, 2793 (1993).
- [128] F.F. Assaad, W. Hanke and D.J. Scalapino, *Flux quantization in the two-dimensional attractive and repulsive Hubbard models*, Phys. Rev. Lett. **71**, 1915 (1993).
- [129] R.E. Hetzel, W. v.d.Linden and W. Hanke, *Pairing correlations in a two-layer Hubbard model*, Phys. Rev. B **50**, 4159 (1994).
- [130] R. Preuss, F.F. Assaad, A. Muramatsu and W. Hanke, *Hubbard Models: A Quantum Monte Carlo Study*, Proceedings on “Superconductivity and Strongly Correlated Electron Systems (Amalfi, 1993)”, World Scientific (1994).
- [131] F.F. Assaad, W. Hanke and D.J. Scalapino, *Temperature derivative of the superfluid density in the attractive Hubbard model*, Phys. Rev. B **49**, 4327 (1994).
- [132] D. Poilblanc, D.J. Scalapino and W. Hanke, *Resonant Impurity Scattering in a Strongly Correlated Electron Model*, Phys. Rev. Lett. **72**, 884 (1994).
- [133] F.F. Assaad, R. Preuss, A. Muramatsu and W. Hanke, *Quantum Monte Carlo simulations of Hubbard type models*, J. L. Temp. Phys. **95**, 251 (1994).
- [134] R. Putz, H. Endres, A. Muramatsu and W. Hanke, *Quantum Monte Carlo Simulations and Weak-Coupling Approximations for the Three-Band Hubbard Model*, Notes on Numerical Fluid Mechanics **48**, 148 (1994).
- [135] F.F. Assaad, W. Hanke and D. J. Scalapino, *Temperature derivative of the Superfluid Density and Flux-Quantization as a Criterion for Superconductivity in Two-dimensional Hubbard Models*, Phys. Rev. B **50**, 12835 (1994).
- [136] A. Muramatsu, R. Preuss, W. v.d.Linden, P. Dieterich, F.F. Assaad and W. Hanke, *Excitation spectra in the 1-D Hubbard model from Quantum Monte Carlo Simulations*, in “Computer Simulations in Condensed Matter Physics VII”, Springer Verlag (1994).

- [137] R. Preuss, A. Muramatsu, P. Dieterich, W. v.d.Linden, F.F. Assaad and W. Hanke, *Spectral Properties of the one-dimensional Hubbard model*, Phys. Rev. Lett. **73**, 732 (1994).
- [138] D. Poilblanc, D.J. Scalapino and W. Hanke, *Binding of holes to magnetic impurities in a strongly correlated system*, Phys. Rev. B **50**, 13020 (1994).
- [139] R. Preuss, F.F. Assaad, A. Muramatsu and W. Hanke, *Quantum Monte Carlo Studies of One- and Two-Dimensional Hubbard Models*, in “The Hubbard Model: Its Physics and Mathematical Physics”, Plenum Press, New York (1995).
- [140] R. Preuss, W. Hanke and W. v.d.Linden, *Quasiparticle dispersion of the 2D Hubbard model: From an insulator to a metal*, Phys. Rev. Lett. **75**, 1344 (1995).
- [141] I.I. Deisz, W. v.d.Linden, R. Preuss and W. Hanke, *Evaluation of dynamical spectra for zero-temperature quantum Monte Carlo simulations: Hubbard lattices and continuous systems*, in “Computer Simulations in Condensed Matter Physics VII”, Springer Verlag, Heidelberg (1995).
- [142] C.A. Hayward, D. Poilblanc, R.M. Noack, D.J. Scalapino and W. Hanke, *Evidence for a superfluid density in  $t$ - $J$  ladders*, Phys. Rev. Lett. **75**, 926 (1995).
- [143] R. Preuss, R. Putz, W. Hanke and W. v.d.Linden, *Continuous Evolution of the 2D Hubbard Model from an Insulator to a Metal*, J. Phys. Chem. Solids **56**, 1659 (1995).
- [144] W. Hanke, W. v.d.Linden and A. Muramatsu, editors of the book *Proceedings of the Würzburg Conference on Magnetic Correlations, Metal-Insulator Transitions and Superconductivity in Novel Materials*, Special Issue of Journal of Low Temperature Physics, (1995).
- [145] D. Poilblanc, D.J. Scalapino and W. Hanke, *Spin and charge modes of the  $t$ - $J$  ladder*, Phys. Rev. B **52**, 6796 (1995).
- [146] R. Preuss, W. v.d.Linden and W. Hanke, *Spectral properties from Quantum Monte Carlo data: A consistent approach*, in “Maximum Entropy and Bayesian Methods”, Kluwer Academic, Dordrecht (1995).
- [147] W. v.d.Linden, R. Preuss and W. Hanke, *Consistent Application of Maximum Entropy to Quantum-Monte-Carlo Data*, J. Phys.: Condens. Matter **8**, 3881 (1996).
- [148] W. Ziegler, P. Dieterich, A. Muramatsu and W. Hanke, *Slave-Boson study in the  $SU(2)$ -invariant representation: Coupled layers in the One-Band Hubbard model*, Phys. Rev. B. **53**, 1231 (1996).
- [149] R. Putz, R. Preuss, A. Muramatsu and W. Hanke, *Conserving approximation for the three-band Hubbard model: Flat quasiparticle dispersion*, Phys. Rev. B. **53**, 5133 (1996).
- [150] D. Poilblanc, T. Sakai, D.J. Scalapino and W. Hanke, *Multimode electron-phonon-coupling in the two-dimensional  $t$ - $J$ -Holstein model*, Europhys. Lett. **34**, 367 (1996).
- [151] H. Endres, R.M. Noack, W. Hanke, D. Poilblanc and D.J. Scalapino, *Dynamical properties of two coupled Hubbard chains at half-filling*, Phys. Rev. B. **53**, 5530 (1996).

- [152] W. Ziegler, D. Poilblanc, R. Preuss, W. Hanke and D.J. Scalapino, *T-matrix formulation of impurity Scattering in correlated systems*, Phys. Rev. B. **53**, 8704 (1996).
- [153] H. Endres, W. Hanke, H.G. Evertz and F. F. Assad, *Comment on “Quantum Monte Carlo Evidence for Superconductivity in the Three-Band Hubbard Model in Two Dimensions”*, Phys. Rev. Lett. **78**, 160 (1997).
- [154] H. Endres, R.M. Noack, W. Ziegler and W. Hanke, *Dynamic properties of doped, strongly coupled Hubbard chains*, Physica B **230-232**, 811 (1997).
- [155] T.J. Hagenaaers, E.H. Brandt, R.E. Hetzel, W. Hanke, M. Leghissa and G. Saemann-Ischenko, *Vortex-line liquid phases: longitudinal superconductivity in a lattice London model*, Phys. Rev. B **55**, 11706 (1997).
- [156] E. Arrigoni, B. Brendel and W. Hanke, *Electron transport in dirty multi-channel systems*, Z. Phys. B **103**, 177 (1997).
- [157] G. Hildebrand, T.J. Hagenaaers, W. Hanke, S. Grabowski and J. Schmalian, *Effects of Electronic Correlations on the Thermoelectric Power of the Cuprates*, Phys. Rev. B **56**, R4317 (1997).
- [158] R. Preuss, W. Hanke, C. Gröber and H.G. Evertz, *Pseudogaps and their Interplay with Magnetic Excitations in the doped 2D Hubbard Model*, Phys. Rev. Lett. **79**, 1122 (1997).
- [159] E. Arrigoni, B. Brendel and W. Hanke, *Electron transport in coupled chains of interacting fermions with impurities*, Phys. Rev. Lett. **79**, 2297 (1997).
- [160] A. Fleszar and W. Hanke, *Spectral properties of quasiparticles in a semiconductor*, Phys. Rev. B **56**, 10228 (1997).
- [161] A. Fleszar and W. Hanke, *Dynamical density response of II-IV semiconductors*, Phys. Rev. B **56**, 12285 (1997).
- [162] S. Meixner, W. Hanke, E. Demler and S.-C. Zhang, *Finite Size Studies on the SO(5) Symmetry of the Hubbard Model*, Phys. Rev. Lett. **79**, 4902 (1997).
- [163] M.G. Zacher, E. Arrigoni, W. Hanke and J.R. Schrieffer, *Systematic numerical study of spin-charge separation in one-dimension*, Phys. Rev. B **57**, 6370 (1998).
- [164] M. Heinrichsmeier, A. Fleszar, W. Hanke and A.G. Eguiluz, *Non-local Density functional Calculations of the Surface, Electronic Structure of Metals: Application to Aluminium and Palladium*, Phys. Rev. B **57**, 14974 (1998).
- [165] W. Hanke, R. Eder and E. Arrigoni, *SO(5)-Theorie der Hochtemperatur-Supraleitung: ein neues Symmetriekonzept in der Festkörperphysik*, Phys. Bl. **54**, 436 (1998).
- [166] R. Eder, W. Hanke and S.-C. Zhang, *Numerical evidence for SO(5) symmetry and superspin multiplets in the two-dimensional t-J model*, Phys. Rev. B **57**(21), 13781–13789 Jun (1998).
- [167] R. Eder, W. Hanke and S.-C. Zhang, *Numerical Evidence for SO(5) Symmetry and Superspin Multiplets in the t-J Model*, J- Phys. Chem. Solids **59**(10-12), 1711–1717 (1998).

- [168] D. Scalapino, Shou-Cheng Zhang and W. Hanke, *SO(5) Symmetric Ladder*, Phys. Rev. B **58**, 443 (1998).
- [169] W. Ziegler, H. Endres and W. Hanke, *Friedel oscillations induced by non-magnetic impurities in the two-dimensional Hubbard model*, Phys. Rev. B **58**, 4362 (1998).
- [170] M. Nagelstraß, H. Droge, H.-P. Steinrück, F. Fischer, T. Lit, A. Waag, G. Landwehr, A. Fleszar and W. Hanke, *The band structure of BeTe - a combined experimental and theoretical study*, Phys. Rev. B **58**, 10394 (1998).
- [171] W. Hanke, O. Schmitt, H. Endres, R. Kleiner and P. Müller, *A microscopic model for the intrinsic Josephson tunneling in high-T<sub>c</sub> Superconductors*, Eur. Phys. J. B **5**, 465–471 (1998).
- [172] W. Hanke, R. Eder, E. Arrigoni, A. Dorneich, S. Meixner and M.G. Zacher, *SO(5) Symmetry in t-J and Hubbard Models*, Festkörperprobleme/Advances in Solid State Physics **38**, 533 (1999).
- [173] R. Eder, A. Dorneich, M.G. Zacher, W. Hanke and S.-C. Zhang, *Dynamics of an SO(5)-symmetric ladder model*, Phys. Rev. B **59**, 561 (1999).
- [174] G. Hildebrand, E. Arrigoni, J. Schmalian and W. Hanke, *Interplane magnetic coupling effects in the multilattice compound Y<sub>2</sub>Ba<sub>4</sub>Cu<sub>7</sub>O<sub>15</sub>*, Phys. Rev. B **59**, R685 (1999).
- [175] S. Kirchner, H.G. Evertz and W. Hanke, *Transport Properties of One-Dimensional Hubbard Models*, Phys. Rev. B **59**, 1825 (1999).
- [176] G. Hildebrand, E. Arrigoni, J. Schmalian and W. Hanke, *Magnetic fluctuations in coupled inequivalent Hubbard layers as a model for Y<sub>2</sub>Ba<sub>4</sub>Cu<sub>7</sub>O<sub>15</sub>*, Eur. Phys. J. B **8**, 195 (1999).
- [177] H. Droge, A. Fleszar, W. Hanke, M. Sing, M. Knupfer, J. Fink, F. Goschenhofer, C.R. Becker, R. Kargerbauer and H.P. Steinrück, *The complex loss function of CdTe*, Phys. Rev. B **59**, 5544 (1999).
- [178] M.G. Zacher, E. Arrigoni, W. Hanke and J.R. Schrieffer, *Numerical study of spin-charge separation in one-dimension*, High Performance Computing in Science and Engineering '98, p. 121 (1999).
- [179] W. Hanke, R. Eder, E. Arrigoni, A. Dorneich and M.G. Zacher, *SO(5) theory of high-T<sub>c</sub> superconductivity: models and experiments*, Proceedings for “Fall 1998 conference Crete”, Physica C, volume 317-318, p. 175, (1999).
- [180] S. Gundel, A. Fleszar, W. Faschinger and W. Hanke, *Atomic and electronic structure of the CdTe(001) surface: LDA and GW calculation*, Phys. Rev. B **59**, 15261 (1999).
- [181] Shou-Cheng Zhang, Jiang-Ping Hu, Enrico Arrigoni, Werner Hanke and Assa Auerbach, *Projected SO(5) Models*, Phys. Rev. B **60**, 13070 (1999).
- [182] M.G. Zacher, A. Dorneich, R. Eder, W. Hanke and S.-C. Zhang, *SO(5) symmetry and single particle spectra*, Proceedings of the Euroconference on “New Symmetries in Statistical Mechanics and Condensed Matter Physics (Torino, 1998)”, Int. J. Mod. Phys. B, Special Issue, volume 13, p. 3039, (1999).

- [183] Werner Hanke, Marc G. Zacher, Enrico Arrigoni and Shou-Cheng Zhang, *Projected  $SO(5)$ -theory and the Interrelation of Superconducting and Antiferromagnetic Gaps in High- $T_c$  compounds*, Proceedings of “LT22 conference (Helsinki, 1999)”, Physica B, volume 280, p. 184, (2000).
- [184] M.G. Zacher, A. Dorneich, C. Gröber, R. Eder and W. Hanke, *The Metal-Insulator Transition in the Hubbard Model*, in “High Performance Computing in Science and Engineering ’99”, p. 130, Springer Verlag (2000).
- [185] S. Waidmann, M. Knupfer, B. Arnold, J. Fink, A. Fleszar and W. Hanke, *Local-field effects and anisotropic plasmon dispersion in diamond*, Phys. Rev. B **61**, 10149 (2000).
- [186] A. Fleszar and W. Hanke, *Ab initio calculation of the electronic structure of mercury chalcogenides*, proceedings of “9th international conference on narrow gap semiconductors”, edited by N. Puhlmann, H.-U. Müller and M. von Ortenberg, p. 48, Berlin (2000).
- [187] A. Fleszar and W. Hanke, *Electronic excitations in beryllium chalcogenides from the ab initio GW approach*, Phys. Rev. B **62**, 2466 (2000).
- [188] C. Gröber, R. Eder and W. Hanke, *Anomalous low doping phase of the Hubbard model*, Phys. Rev. B **62**, 4336 (2000).
- [189] M. Zacher, E. Arrigoni, W. Hanke and S.-C. Zhang, *Interrelation of Superconducting and Antiferromagnetic Gaps in High- $T_c$  Compounds: a Test Case for the  $SO(5)$  Theory*, Phys. Rev. Lett. **85**, 824 (2000).
- [190] M. Zacher, R. Eder, E. Arrigoni and W. Hanke, *Stripes in doped antiferromagnets: single-particle spectral weight*, Phys. Rev. Lett. **85**, 2585 (2000).
- [191] E. Arrigoni and W. Hanke, *Critical properties of projected  $SO(5)$  models at finite temperatures*, Phys. Rev. B **62**, 11770 (2000).
- [192] T. Eckl, E. Arrigoni, W. Hanke and F.F. Assaad,  *$t$ - $U$ - $W$  model of a  $d_{x^2-y^2}$  superconductor in the proximity of an antiferromagnetic Mott insulator: Diagrammatic studies versus quantum Monte Carlo simulations*, Phys. Rev. B **62**, 12395 (2000).
- [193] M. Zacher, R. Eder, E. Arrigoni and W. Hanke, *Stripes in doped antiferromagnets: bond-centered vs. site-centered*, Int. J. Mod. Phys. B **14**, 3783 (2000).
- [194] C. Dahnken, R. Eder, E. Arrigoni and W. Hanke, *Spectral Properties of  $CuO_2$  Planes in a Cluster Perturbation Approach*, in “High Performance Computing in Science and Engineering ’00”, edited by E. Krause and W. Jäger, p. 119–127, Springer Verlag, Heidelberg (2000).
- [195] A. Dorneich, E. Arrigoni, W. Hanke, M. Troyer and S.-C. Zhang, *A bosonic model for the high-temperature superconductivity and antiferromagnetism: numerical studies*, Invited paper to “NIC Symposium 2001”, edited by H. Rollnik and D. Wolf, volume 9, p. 281–290, John von Neumann Institute for Computing, Jülich (2001).
- [196] T. Eckl, E. Arrigoni, W. Hanke and D.J. Scalapino, *Interplay of phase fluctuations and electronic excitations in high- $T_c$  superconductors*, in “High Performance Computing in Science and Engineering ’01”, p. 210, Springer Verlag, Heidelberg (2001).

- [197] M. Zacher, R. Eder, E. Arrigoni and W. Hanke, *Evolution of the stripe phase as a function of doping - analysis of angle-resolved photoemission data*, Phys. Rev. B **65**, 45109 (2002).
- [198] A. Dorneich, W. Hanke, E. Arrigoni, M. Troyer and S.C. Zhang, *Phase diagram and dynamics of the projected  $SO(5)$ -symmetric model of high  $T_c$  superconductivity*, Phys. Rev. Lett. **88**, 57003 (2002).
- [199] C. Dahnken, E. Arrigoni and W. Hanke, *Spectral Properties of High- $T_c$  Cuprates via a Cluster-Perturbation Approach*, J. Low Temp. Phys. **126**, 949 (2002).
- [200] E. Arrigoni, A.P. Harju, W. Hanke, B. Brendel and S.A. Kivelson, *Stripes and superconducting pairing in the  $t$ - $J$  model with Coulomb interactions*, Phys. Rev. B **65**, 134503 (2002).
- [201] A. Dorneich, W. Hanke, E. Arrigoni, M. Troyer and S.-C. Zhang, *Dynamical Properties and the Phase Diagram of the projected  $SO(5)$ -symmetric model of high- $T_c$  Superconductors*, J. Phys. Chem. Solids **63**, 1365–1370 (2002).
- [202] T. Eckl, D.J. Scalapino, E. Arrigoni and W. Hanke, *Pair Phase Fluctuations and the Pseudogap*, Phys. Rev. B **66**, 140510 (2002).
- [203] E. Arrigoni, M. Zacher, R. Eder, W. Hanke, A.P. Harju and S.A. Kivelson, *Where do holes go in doped antiferromagnets and what is their relationship to superconductivity?*, Journal of Physics and Chemistry of Solids **63**(12), 2207–2212 (2002).
- [204] W. Hanke, *Unkonventionelle Paarung*, Physik Journal **Juni '02**, 21 (2002).
- [205] Z. Huang, W. Hanke and E. Arrigoni, *Frozen phonon calculations in the three-band Hubbard model for high-temperature superconductors*, in “High Performance Computing in Science and Engineering '02”, edited by E. Krause and W. Jäger, p. 149, Springer Verlag (2002).
- [206] S. Wagner, W. Hanke, A. Bode and F. Durst, editors of the book *Proceedings of the First Joint HLRB and KONWIHR Result and Reviewing Workshop (Garching, Oct. 2002)*, Springer, Berlin/Heidelberg/New York, (2003).
- [207] T. Eckl, Z.-B. Huang, W. Hanke and E. Arrigoni, *Phase fluctuations and the Role of Electron-Phonon Coupling in High- $T_c$  Superconductors*, in “Proceedings of the First Joint HLRB and KONWIHR Result and Reviewing Workshop (Garching, Oct. 2002)”, edited by S. Wagner, W. Hanke, A. Bode and F. Durst, p. 269, Springer, Berlin/Heidelberg/New York (2003).
- [208] A. Dorneich, M. Jöstingmeier, E. Arrigoni, C. Dahnken, T. Eckl, W. Hanke, S.C. Zhang and M. Troyer, *Object-oriented C++ class library for many body physics on finite lattices and a first application to high-temperature superconductivity*, in “Proceedings of the First Joint HLRB and KONWIHR Result and Reviewing Workshop (Garching, Oct. 2002)”, edited by S. Wagner, W. Hanke, A. Bode and F. Durst, p. 307, Springer, Berlin/Heidelberg/New York (2003).
- [209] C. Dahnken, E. Arrigoni, W. Hanke, M.G. Zacher and R. Eder, *Cluster-perturbation-algorithm applied to inhomogenous strongly-correlated materials*, in “Proceedings of the First Joint HLRB and KONWIHR Result and Reviewing Workshop

- (Garching, Oct. 2002)”, edited by S. Wagner, W. Hanke, A. Bode and F.Durst, p. 289, Springer, Berlin/Heidelberg/New York (2003).
- [210] T. Eckl, W. Hanke and E. Arrigoni, *Phase-fluctuation induced reduction of kinetic energy at the superconducting transition*, Phys. Rev. B **68**, 014505 (2003).
  - [211] M. Jöstingmeier, A. Dorneich, E. Arrigoni, W. Hanke and Shou-Cheng Zhang, *Scaling properties of the projected  $SO(5)$  model in three dimensions*, Phys. Rev. B **68**, 245111 (2003).
  - [212] E. Arrigoni, M. Zacher, T. Eckl and W. Hanke, *Antiferromagnetic and superconducting gaps and their interrelation in high- $T_c$  cuprates*, Ann. Phys. **12**(5), 320–338 (2003).
  - [213] Z.B. Huang, W. Hanke, E. Arrigoni and D.J. Scalapino, *Electron-phonon vertex in the two-dimensional one-band Hubbard model*, Phys. Rev. B **68**, 220507 (2003).
  - [214] A. Dorneich, M. Jostingmeier, E. Arrigoni, W. Hanke and M. Troyer, *Accessing the Dynamics of Strongly-Correlated Many Body Systems within the Operator Loop Update and its Application to High-Temperature Superconductivity*, in “Proceedings of the NIC Symposium 17.-18. Feb 2004”, edited by D. Wolf, G. Münster and M. Kremer, p. 227, NIC Series Vol. 20 (2003).
  - [215] M. Fleck, A.I. Lichtenstein, M.G. Zacher, W. Hanke and A.M. Oles, *On the nature of the magnetic transition in a Mott insulator*, Eur. Phys. J. B **37**, 439–446 (2004).
  - [216] L. Plucinski, R.L. Johnson, A. Fleszar, W. Hanke, W. Weigand, C. Kumpf, C. Heske, E. Umbach, T. Schallenberg and L.W. Molenkamp, *Valence-band electronic structure of ZnSe(001) films: Theory and experiment*, Phys. Rev. B **70**, 125308 (2004).
  - [217] S. Wagner, W. Hanke, A. Bode and F. Durst, editors of the book *Proceedings of the Second Joint HLRB and KONWIHR Result and Reviewing Workshop (Garching, March. 2004)*, Springer, Berlin/Heidelberg/New York, (2004).
  - [218] M. Jöstingmeier, A. Dorneich, E. Arrigoni, W. Hanke and S.C. Zhang, *Phasediagram and scaling properties of the projected  $SO(5)$  model in three dimension*, in “Proceedings of the Second Joint HLRB and KONWIHR Result and Reviewing Workshop (Garching, March. 2004)”, edited by S. Wagner, W. Hanke, A. Bode and F.Durst, p. 289, Springer, Berlin/Heidelberg/New York (2004).
  - [219] Z.B. Huang, W. Hanke and E. Arrigoni, *Electron Spin Interactions in the High  $T_c$  Superconductors*, in “Proceedings of the Second Joint HLRB and KONWIHR Result and Reviewing Workshop (Garching, March. 2004)”, edited by S. Wagner, W. Hanke, A. Bode and F.Durst, p. 301, Springer, Berlin/Heidelberg/New York (2004).
  - [220] E. Demler, W. Hanke and S.C. Zhang, *The  $SO(5)$  Theory of antiferromagnetism and superconductivity*, Rev. Mod. Phys **76**, 909–974 (2004).
  - [221] T. Eckl, W. Hanke, S.V. Borisenko, A.A. Kordyuk, T. Kim, A. Koitzsch, M. Knupfer and J. Fink, *Change of quasiparticle dispersion in crossing  $T_c$  in the underdoped cuprates*, Phys. Rev. B **70**, 094522 (2004).

- [222] C. Dahnken, M. Aichhorn, W. Hanke, E. Arrigoni and M. Potthoff, *Variational cluster approach to spontaneous symmetry breaking: The itinerant antiferromagnet in two dimensions*, Phys. Rev. B **70**, 245110 (2004).
- [223] C. Dahnken, M. Potthoff, E. Arrigoni and W. Hanke, *Electron-doping evolution of the quasiparticle band of the cuprates*, in “High Performance Computing in Science and Engineering ’04”, edited by E. Krause, W. Jäger and M. Resch, p. 141, Springer, Berlin (2004).
- [224] A. Fleszar and W. Hanke, *Electronic structure of II<sup>B</sup>-IV semiconductors in the GW approximation*, Phys. Rev. B **71**, 045207 (2005).
- [225] Z. Huang, W. Hanke and E. Arrigoni, *CUHE: Electron-Spin Interaction in High-T<sub>c</sub> Superconductors*, in “High Performance Computing in Science and Engineering (Garching 2004)”, p. 205, Springer, Berlin/Heidelberg (2005).
- [226] M. Jöstingmeier, A. Dorneich, E. Arrigoni, W. Hanke and S.C. Zhang, *OOPCV: Phasediagram and Scaling Properties of the Projected SO(5) Model in Three Dimensions*, in “High Performance Computing in Science and Engineering (Garching 2004)”, p. 205, Springer, Berlin/Heidelberg (2005).
- [227] Z.B. Huang, W. Hanke and E. Arrigoni, *Role of vertex corrections in the spin-fluctuation-mediated pairing mechanism*, Europhys. Lett. **71**, 959 (2005).
- [228] C. Dahnken, M. Potthoff, E. Arrigoni and W. Hanke, *Correlated band structure of electron-doped cuprate materials*, Fizika Nizkikh Temperatur **32**(4-5), 602–608 (2006).
- [229] D. Eich, O. Fuchs, U. Groh, L. Weinhardt, R. Fink, E. Umbach, C. Heske, A. Fleszar, W. Hanke, E.K.U. Gross, C. Bostedt, T. v. Buuren, N. Franco, L.J. Terminello, M. Keim, G. Reuscher, H. Lugauer and A. Waag, *Resonant inelastic soft X-ray scattering of Be chalcogenides*, Phys. Rev. B **73**, 115212 (2006).
- [230] W. Hanke, M. Aichhorn, E. Arrigoni and M. Potthoff, *Correlated band structure and the ground-state phase diagram in high-T<sub>c</sub> cuprates*, Physica B **378-380**, 60 (2006).
- [231] M. Aichhorn, E. Arrigoni, M. Potthoff and W. Hanke, *Antiferromagnetic to superconducting phase transition in the hole- and electron-doped Hubbard model at zero temperature*, Phys. Rev. B **74**, 024508 (2006).
- [232] T. Eckl and W. Hanke, *Precursor effects of the superconducting state caused by d-wave phase fluctuations above T<sub>c</sub>*, Phys. Rev. B **74**, 134510 (2006).
- [233] Z.B. Huang, W. Hanke, E. Arrigoni and A.V. Chubukov, *Renormalization of the electron-spin-fluctuation interaction in the t-t’-U Hubbard model*, Phys. Rev. B **74**, 184508 (2006).
- [234] J. Fink and W. Hanke, *“Klebstoff“ für die Supraleitung*, Physik Journal **5**(10), 22 (2006).
- [235] S. Hochkeppel and W. Hanke, *Understanding High-Temperature Superconductivity*, inSiDE **4**(2), 6 (2006).
- [236] M. Aichhorn, E. Arrigoni, M. Potthoff and W. Hanke, *Variational cluster approach to the Hubbard model: Phase-separation tendency and finite-size effects*, Phys. Rev. B **74**, 235117 (2006).

- [237] W. Hanke, M. Aichhorn, E. Arrigoni and M. Potthoff, *A controlled route to the competing phases and the single-particle spectral function in the ground state of the 2D Hubbard model*, Physica C **460-462**, 248–251 (2007).
- [238] E. Arrigoni, M. Daghofer, M. Aichhorn and W. Hanke, *Variational cluster treatment of the three-band Hubbard model: Electron vs. hole doping*, Physica C **460-462**, 981–982 (2007).
- [239] L. Weinhardt, O. Fuchs, E. Umbach, C. Heske, A. Fleszar and W. Hanke, *Resonant inelastic soft x-ray scattering, x-ray absorption spectroscopy, and density functional theory calculations of the electronic bulk band structure of CdS*, Phys. Rev. B **75**, 165207 (2007).
- [240] A. Fleszar, M. Potthoff and W. Hanke, *Electronic structure of zinc-blende MnTe within the GW approximation*, phys. stat. sol. (c) **4**(9), 3270–3279 (2007).
- [241] A. Fleszar, W. Hanke, W. Weigand, C. Kumpf, C. Heske, E. Umbach, L. Plucinski and R.L. Johnson, *Angle-resolved photoemission on ZnSe(001): determination of conduction band quasiparticle shifts*, phys. stat. sol. (c) **4**(9), 3204–3209 (2007).
- [242] M. Aichhorn, E. Arrigoni, Z.B. Huang and W. Hanke, *Superconducting Gap in the Hubbard Model and the Two-Gap Energy Scales of High- $T_c$  Cuprate Superconductors*, Phys. Rev. Lett **99**, 257002 (2007).
- [243] M. Aichhorn, E. Arrigoni, M. Potthoff and W. Hanke, *Phase separation and competition of superconductivity and magnetism in the two-dimensional Hubbard model: From strong to weak coupling*, Phys. Rev. B **76**, 224509 (2007).
- [244] S. Hochkeppel, T.C. Lang, C. Brünner, F.F. Assaad and W. Hanke, *Quantum Monte Carlo Studies of Strongly Correlated Electron Systems*, in “High Performance Computing in Science and Engineering (Garching/München 2007)”, edited by S. Wagner, M. Steinmetz, A. Bode and M. Brehm, p. 669, Springer, Berlin/Heidelberg (2007).
- [245] E. Arrigoni, L. Chioncel, H. Allmaier, M. Aichhorn and W. Hanke, *Electron correlations in solids: From high-temperature superconductivity to half-metallic ferromagnetism*, Proceedings on “Recent progress in many-body theories (Barcelona, 16-20 July 2007)”, edited by J. Boronat, G. Astrakharchik and F. Mazzanti, p. 336, World Scientific (2007).
- [246] M. Balzer, W. Hanke and M. Potthoff, *Mott transition in one dimension: Benchmarking dynamical cluster approaches*, Phys. Rev. B **77**, 045133 (2008).
- [247] S. Hochkeppel, F.F. Assaad and W. Hanke, *Dynamical-Quantum-Cluster Approach to Two-Particle Correlation Functions in the Hubbard Model*, Phys. Rev. B **77**, 205103 (2008).
- [248] T. Dahm, V. Hinkov, S.V. Borisenko, A.A. Kordyuk, V.B. Zabolotnyy, J. Fink, B. Büchner, D.J. Scalapino, W. Hanke and B. Keimer, *Strength of the Spin-Fluctuation-Mediated Pairing Interaction in a High-Temperature Superconductor*, Nature Physics 2009/01/18/online (2009).
- [249] E. Arrigoni, M. Aichhorn, M. Daghofer and W. Hanke, *Phase diagram and single-particle spectrum of CuO<sub>2</sub> high- $T_c$  layers: variational cluster approach to the three-band Hubbard model*, New J. Phys. **11**, 055066 (2009).

- [250] C. Platt, C. Honerkamp and W. Hanke, *Pairing in the iron arsenides: a functional RG treatment*, New J. Phys. **11**, 055058 (2009).
- [251] L. Weinhardt, O. Fuchs, A. Fleszar, M. Bär, M. Blum, M. Weigand, J.D. Denlinger, W. Yang, W. Hanke, E. Umbach and C. Heske, *Resonant inelastic soft x-ray scattering of CdS: A two-dimensional electronic structure map approach*, Phys. Rev. B **79**, 165305 (2009).
- [252] G. Li, W. Hanke, A.N. Rubtsov, S. Bäse and M. Potthoff, *Accessing thermodynamics from dynamical cluster-embedding approaches*, Phys. Rev. B **80**(19), 195118 (2009).
- [253] S. Brehm, E. Arrigoni, M. Aichhorn and W. Hanke, *Theory of two-particle excitations and the magnetic susceptibility in high- $T_c$  cuprate superconductors*, Europhysics Letters **89**, 27005 (2010).
- [254] C. Bruene, A. Roth, E.G. Novik, M. Koenig, H. Buhmann, E.M. Hankiewicz, W. Hanke, J. Sinova and L.W. Molenkamp, *Evidence for the ballistic intrinsic spin Hall effect in HgTe nanostructures*, Nature Physics 2010/05/02/online (2010).
- [255] M. Balzer, W. Hanke and M. Potthoff, *Importance of local correlations for the order parameter of high- $T_c$  superconductors*, Phys. Rev. B **81**(14), 144516 Apr (2010).
- [256] R. Hackl and W. Hanke, editors of the book *Towards a better understanding of superconductivity at high transition temperatures*, in Eur. Phys. J. Special Topics **188**, Springer, Berlin/Heidelberg, (2010).
- [257] W. Hanke, M.L. Kiesel, M. Aichhorn, S. Brehm and E. Arrigoni, *The 3-Band Hubbard-Model versus the 1-Band Model for the high- $T_c$  Cuprates: Pairing Dynamics, Superconductivity and the Ground-State Phase Diagram*, Eur. Phys. J. Special Topics **188**, 15–32 (2010).
- [258] T.C. Lang, M. Bercx, D. Luitz, G. Li, F.F. Assaad and W. Hanke, *Quantum Monte Carlo Studies of Strongly Correlated Electron Systems*, in “High Performance Computing in Science and Engineering (Garching/München 2010)”, edited by S. Wagner, M. Steinmetz, A. Bode and M.M. Müller, p. 503, Springer, Berlin/Heidelberg (2010).
- [259] G. Li, M. Laubach, A. Fleszar and W. Hanke, *Geometrical frustration and the competing phases of the Sn/Si(111)  $3 \times 3R30^\circ$  surface systems*, Phys. Rev. B **83**(4), 041104 Jan (2011).
- [260] R. Thomale, C. Platt, W. Hanke and B.A. Bernevig, *Mechanism for Explaining Differences in the Order Parameters of FeAs-Based and FeP-Based Pnictide Superconductors*, Phys. Rev. Lett. **106**(18), 187003 May (2011).
- [261] W. Hanke, C. Platt and R. Thomale, *Order-parameter anisotropies in the pnictides - An optimization principle for multi-band superconductivity*, Ann. Phys. **523**(8-9), 638–644 (2011).
- [262] P. Höpfner, J. Schäfer, A. Fleszar, S. Meyer, C. Blumenstein, T. Schramm, M. Heßmann, X. Cui, L. Patthey, W. Hanke and R. Claessen, *Electronic band structure of the two-dimensional metallic electron system Au/Ge(111)*, Phys. Rev. B **83**, 235435 Jun (2011).

- [263] R. Thomale, C. Platt, W. Hanke, J. Hu and B.A. Bernevig, *Exotic d-wave superconductivity in strongly hole doped  $K_xBa_{1-x}Fe_2As_2$* , Phys. Rev. Lett. **107**, 117001 (2011).
- [264] C. Platt, R. Thomale and W. Hanke, *Superconducting state of the iron pnictide  $LiFeAs$ : A combined density-functional and functional-renormalization-group study*, Phys. Rev. B **84**, 235121 (2011).
- [265] G. Li and W. Hanke, *Efficient treatment of the high-frequency tail of the self-energy function and its relevance for multiorbital models*, Phys. Rev. B **85**, 115103 (2012).
- [266] P. Höpfner, J. Schäfer, A. Fleszar, J.H. Dil, B. Slomski, F. Meier, C. Loho, C. Blumenstein, L. Patthey, W. Hanke and R. Claessen, *Three-Dimensional Spin Rotations at the Fermi Surface of a Strongly Spin-Orbit Coupled Surface System*, (Editors Suggestion), Phys. Rev. Lett. **108**, 186801 (2012).
- [267] C. Platt, R. Thomale, C. Honerkamp, S.-C. Zhang and W. Hanke, *Mechanism for a pairing state with time-reversal symmetry breaking in iron-based superconductors*, Phys. Rev. B **85**, 180502 (R) (2012).
- [268] M.L. Kiesel, C. Platt, W. Hanke, D.A. Abanin and R. Thomale, *Competing many-body instabilities and unconventional superconductivity in graphene*, Phys. Rev. B **86**, 020507 (R) (2012).
- [269] G. Li, P. Höpfner, J. Schäfer, C. Blumenstein, S. Meyer, A. Bostwick, E. Rotenberg, R. Claessen and W. Hanke, *Magnetic-Order in a frustrated two - dimensional atom lattice at a semiconductor surface*, Nature Communications Vol. 4, 1620 (2013).
- [270] M.L. Kiesel, C. Platt, W. Hanke and R. Thomale, *Anisotropic chiral  $d + id$  superconductivity in  $Na_xCoO_2 \cdot yH_2O$* , Phys. Rev. Lett. **111**, 097001 (2013).
- [271] A. Barfuss, A. Fleszar, G. Li, W. Hanke, R. Claessen and J. Schäfer, *Elemental Topological Insulator with a Tunable Fermi level: strained  $\alpha$ -Sn on InSb (001)*, Phys. Rev. Lett. **111**, 157205 (2013).
- [272] Q. H. Wang, Ch. Platt, Y. Yang, C. Honerkamp, F.C. Zhang, W. Hanke, T.M. Rice and R. Thomale, *Theory of Superconductivity in a 3-orbital model of  $Sr_2RuO_4$* , Eur. Phys. Lett. **104**, 17013 (2013).
- [273] Ch. Platt, W. Hanke and R. Thomale, *Functional renormalization group for multi-orbital Fermi surface instabilities*, Review Article: Advances in Physics, Vol. **62**, 453-562 (2013).

- [274] W. Hanke, *Present State, Potential and Perspectives of Superconductivity*, Review Article presented by the FESTO Company at the Cebit Hannover, [www.festo.com](http://www.festo.com) (2013).
- [275] G. Li, A.E. Antipov, A.N. Rubtsov, S. Kirchner and W. Hanke, *Competing phases of the Hubbard model on a triangular lattice – insights from the entropy*, PRB **89**, 161118 (R) (2014).
- [276] M.H. Fischer, T. Neupert, Ch. Platt, A.P. Schnyder, W. Hanke, R. Thomale and M. Sigrist, *Chiral d-wave superconductivity in SrPtAs*, Phys. Rev. B **89**, 020509 (R) (2014).
- [277] A. Fleszar and W. Hanke, *The Au/Ge (111) surface system and its spin-orbit coupling: similarities of the spin texture with that of topological insulators*, Adv. in Cond-Mat. Physics, Vol. 2015, Article ID 531498 (2015).
- [278] G. Li, B.H. Yan, R. Thomale and W. Hanke, *Topological nature and the multiple Dirac cones hidden in Bismuth high- $T_C$  superconductors*, Scient. Reports (Nature), 15:10435, DOI:10.1038 (2015).
- [279] S. Glass, G. Li, F. Adler, J. Aulbach, A. Fleszar, R. Thomale, W. Hanke, R. Claessen and J. Schäfer, *Triangular Spin-Orbit coupled lattice with Strong Coulomb Correlations: Sn Atoms on a SiC (001) Substrate*, Phys. Rev. Lett. **114**, 247602 (2015).
- [280] M. Laubach, R. Thomale, Ch. Platt, W. Hanke and G. Li, *Phase diagram of the Hubbard model on the anisotropic triangular lattice*, Phys. Rev. B **91**, 245125 (2015).
- [281] G. Li, W. Hanke, G. Sangiovanni and B. Trauzettel, *Interacting weak topological insulators and their transition to Dirac semimetal phases*, Phys. Rev. B **92**, 235149 (2015).
- [282] L. Elster, Ch. Platt, R. Thomale, W. Hanke and E.M. Hankiewicz, *Accessing topological superconductivity via a combined STM and renormalization group analysis*, Nature Comm. **6**, 8232 (2015).
- [283] F. Reis, G. Li, L. Dudy, M. Bauernfeind, S. Glass, W. Hanke, R. Thomale, J. Schäfer, R. Claessen, *Bismuthene on a SiC substrate: A candidate for a high-temperature quantum spin Hall material*, Science, DOI: 10.1126/science.aai8142 (2017).
- [284] C. Platt, G. Li, M. Fink, W. Hanke, R. Thomale, *Evolution of superconductivity gap anisotropy in hole-doped 122 iron pnictides*, Phys. Stat. Sol. B. **254**, 1600350 (2017)
- [285] G. Li, W. Hanke, E.M. Hankiewicz, F. Reis, J. Schäfer, R. Claessen, C. Wu, R. Thomale, *Theoretical paradigm for the quantum spin Hall effect at high temperatures*, Phys. Rev. B **98**, 165146 (2018)
- [286] F. Dominguez, B. Scharf, G. Li, J. Schäfer, R. Claessen, W. Hanke, R. Thomale, E.M. Hankiewicz, *Testing topological protection of edge states in hexagonal quantum spin Hall candidate materials*, Phys. Rev. B **98**, 161407 (R) (2018)
- [287] T. Böhm, R. Thomale, C. Platt, T.A. Meier, W. Hanke, T. P. Devereaux, D. J. Scalapino, P. J. Hirschfeld, R. Hackl, *Mircoscopic origin of Cooper paring in the iron-based superconductor Ba<sub>1-x</sub>K<sub>x</sub>FeAs<sub>2</sub>*, npj Nature, Qu. Materials (2018) 3:48

- [288] D. Di Sante, X. Wu, M. Fink, W. Hanke und R. Thomale, *Triplet superconductivity in the Dirac semimetal Germanene on a substrate*, Phys. Rev. B99, 201106 (R) (2019)
- [289] X. Wu, M. Fink, W. Hanke, R. Thomale, D. Di Sante, *Unconventional superconductivity in a doped quantum spin Hall insulator*, Phys. Rev B100, 041117 (R) (2019)
- [290] X. Wu, D. Di Sante, T. Schwemmer, W. Hanke, H.Y.Hwang, S. Raghu, R. Thomale, *Robust  $d_{x^2-y^2}$ -wave superconductivity of infinite-layer nickelates*, Phys. Rev. B101, 060504 (R) (2020)
- [291] X. Wu, W. Hanke, M. Fink, M. Klett, R. Thomale, *Harmonic fingerprint of unconventional superconductivity in twisted bilayer graphene*, Phys. Rev. B101, 134517 (2020)
- [292] X. Wu, K. Jiang, D. Di Sante, W. Hanke, A. P. Schnyder, J. Hu, R. Thomale, *Surface s-wave superconductivity for oxide-terminated infinite-layer nickelates*, submitted to Phys. Rev. Letters arXiv: 2008.06009
- [293] M. Klett, T. Schwemmer, S. Wolf, X. Wu, D. Riegler, A. Dittmaier, D. Di Sante, G. Li, W. Hanke, S. Rachel, R. Thomale, *From high- $T_c$  to low- $T_c$ : multi-orbital effects in transition-metaloxides*, Phys. Rev. B 104,100502 (2021)
- [294] X. Wu, T. Schwemmer, T. Müller, A. Consiglio, G. Sangiovanni, D. Di Sante, W. Hanke, A. Schnyder, T. Neupert, R. Thomale. *Nature of unconventional pairing in the Kagome superconductors  $AV_3Sb_5$ :  $CA=k,R3,C5$* , Phys. Rev, Letters 127,177001 (2021).
- [295] A. Consiglio, T. Schwemmer, X. Wu, W. Hanke, T. Neupert, R. Thomale, G. Sangiovanni, D. Di Sante. *Van-Hove tuning of  $AV_3Sb_5$  kagome metals under pressure and strain*.Physical Review B 105(16), 165146 (2022).
- [296] D. Di Sante, W. Hanke, R. Thomale, G. Sangiovanni. *Electronic correlations and long-range universal scaling in kagome materials*. Phys. Rev. Research 5, L012008 (2023).
- [297] Y. Xia, S Jin, J. Hu, R. Claessen, W Hanke, R. Thomale, G Li. *Band inversion induced large-gap quantum spin Hall states in III-Bi-monolayer/ $SiO_2$* . Phys. Rev. B 106, 165203 (2023).
- [298] S. Yin, Y. Xia, J. Hu, R. Claessen, W. Hanke, R. Thomale, G. Li. *Large-gap quantum anomalous Hall states induced by functionalizing buckled Bi-III monolayer/ $Al_2O_3$* . Phys. Rev. B 106, 125151 (2023).
- [299] D. Di Sante, W. Hanke, R. Thomale. *Antiferromagnetic fluctuations and the magnetic penetration depth in infinite-layer superconducting nickelates*. Preprint (2022)
- [300] M. Sypererek, R. Stühler, A. Consiglio, F. Reis, S. Höfling, R. Thomale, W. Hanke, R. Claessen, D. Di Sante, Ch. Schneider. *Observation of room temperature excitons in an atomically thin topological insulator*. Nature Communications 13, 6313 (2022)
- [301] D. Di Sante, B. Kim, W. Hanke, C. Franchini, R. Thomale, G. Sangiovanni. *Electronic correlations and universal long-range scaling in kagome metals*, Phys. Rev. Research 5, L012008 (2023).

- [302] T. Schwemmer, H. Hohmann, M. Dürrnagel, J. Potten, J. Beyer, S. Rachel, Y. Wu, S. Raghu, T. Müller, W. Hanke, R. Thomale, *Sublattice modulated superconductivity in the kagome Hubbard model*, Phys. Rev. B110, 024501 (2024).
- [303] X. Cai, A. Consiglio, D. Di Sante, R. Thomale, W. Hanke, *Continuum theory for topological phase transitions in exciton systems*, Phys. Rev. 113, 205121 (2026), Editor's suggestion.