

Publication List, J. Zaanen.

1. J. Zaanen, G. A. Sawatzky and J. W. Allen, 'Band Gaps and Electronic Structure of Transition-Metal Compounds', Phys. Rev. Lett. **55**, 418 (1985).
2. J. Fink, Th. Mueller-Heinzerling, B. Scheerer, W. Speier, F. U. Hillebrecht, J. C. Fuggle, J. Zaanen and G. A. Sawatzky, '2p Absorption Spectra of the 3d Elements', Phys. Rev. B **32**, 4899 (1985).
3. J. Zaanen, G. A. Sawatzky, J. Fink, W. Speier and J. C. Fuggle, ' $L_{2,3}$ Absorption Spectra of the Lighter 3d Transition Metals', Phys. Rev. B **32**, 4905 (1985).
4. G. van der Laan, J. Zaanen, G. A. Sawatzky, R. Karnatak and J.-M. Esteva, 'Correlation Effects, Charge-transfer Energies and Covalency in Nickel Compounds as Determined by X-Ray Absorption Spectroscopy', Solid State Commun. **56**, 673 (1985).
5. G. van der Laan, J. Zaanen, G. A. Sawatzky, R. Karnatak and J.-M. Esteva, 'Comparison of X-ray Absorption with X-ray Photoemission of Nickel dihalides and NiO', Phys. Rev. B **33**, 4233 (1986).
6. J. Zaanen, G. A. Sawatzky and J. W. Allen, 'The Electronic Structure and Band Gaps in Transition Metal Compounds', J. Magn. Magn. Mat. **54-57**, 607 (1986).
7. J. Zaanen, C. Westra and G. A. Sawatzky, 'Determination of the Electronic Structure of Transition Metal Compounds: 2p X-ray Photoemission Spectroscopy of the Nickel Dihalides', Phys. Rev. B **33**, 8060 (1986).
8. J. Zaanen and G. A. Sawatzky, 'Strong Interference between Decay Channels and Valence Electron Rearrangements in Core Hole Spectroscopy', Phys. Rev. B **33**, 8074 (1986).
9. J. Zaanen, 'The Electronic Structure of Transition Metal Compounds in the Impurity Model', Thesis, University of Groningen (1986).
10. G. van der Laan, B. T. Thole, J. Zaanen, G. A. Sawatzky, J. C. Fuggle, R. Karnatak and J.-M. Esteva, 'Multiplet Effects in Near Edge XAS for Ground State Studies', J. Phys. (Paris) Coll. **C8**, 997 (1986).
11. A. M. Oles, J. Zaanen and P. Fulde, 'How Strongly are Electrons Correlated in the High T_c Superconducting Materials', Physica **148B**, 260 (1987).

12. J. Zaanen and G. A. Sawatzky, 'The Electronic Structure and Superexchange Interactions in Transition-Metal Compounds', *Can. J. Phys.* **65**, 1262 (1987).
13. J. Zaanen and A. M. Oles, 'Canonical Perturbation Theory and the Two Band Model for High- T_c Superconductors', *Phys. Rev. B* **37**, 9423 (1988).
14. O. Gunnarsson, O. K. Andersen, O. Jepsen and J. Zaanen, 'Ab-Initio Calculations of the Parameters in the Anderson Model', Springer Series in Solid State Sciences, Vol. 81 'Core-level Spectroscopy in Condensed Systems', Eds. J. Kanamori and A. Kotani (Springer-Verlag, Berlin, Heidelberg, 1988).
15. J. Zaanen, A. T. Paxton, O. Jepsen and O. K. Andersen, 'Chain-fragment Doping and the Phase Diagram of $YBa_2Cu_3O_{7-x}$ ', *Phys. Rev. Lett.* **60**, 2685 (1988).
16. J. Zaanen, O. Jepsen, O. Gunnarsson, A. T. Paxton, O. K. Andersen and A. Svane, 'What can be learned about High T_c from Local Density Theory?', *Physica C* **153-155**, 1636 (1988).
17. A. M. Oles and J. Zaanen, 'Absence of Pairing Mechanism due to Coupling of Oxygen Holes to Localized Spins in High T_c Superconductors', *Physica C* **153-155**, 1229 (1988).
18. A. M. Oles and J. Zaanen, 'Model Study of Antiferromagnetism in High T_c Superconducting Oxides', *J. Magn. Magn. Mat.* **76-77**, 568 (1988).
19. A. M. Oles and J. Zaanen, 'Localized vs. Itinerant Picture of High- T_c Superconducting Oxides', *Int. J. Mod. Phys.* **1**, 751 (1988).
20. O. Gunnarsson, O. K. Andersen, O. Jepsen and J. Zaanen, 'Density Functional Calculation of the Parameters in the Anderson Model: Application to Mn in CdTe', *Phys. Rev. B* **39**, 1708 (1989).
21. F. U. Hillebrecht, J. Fraxedas, L. Ley, H. J. Trodhal, J. Zaanen, W. Braun, M. Mast, H. Petersen, M. Schaible, L. C. Bourne, P. Pinsukanjana and A. Zettl, 'Experimental Electronic Structure of $Bi_2CaSr_2Cu_2O_{8+y}$ ', *Phys. Rev. B* **39**, 236 (1989).
22. J. Zaanen, 'Band Formation and the Trivalent Limit of the High- T_c Oxides', *Proc. International Symposium on High T_c Superconductivity*, Jaipur (ed. K. B. Garg, Oxford, New Dehli, 1989).
23. A. M. Oles and J. Zaanen, 'Mean-Field Theories of the Two-Band Model and the Magnetism in High T_c Oxides', *Phys. Rev. B* **39**,

- 9175 (1989).
24. F. U. Hillebrecht, J. Fraxedas, L. Ley, H. J. Trodhal and J. Zaanen, 'Photoemission Spectroscopy of $Bi_2CaSr_2Cu_2O_{8+y}$ in the Normal and Superconducting State', in 'High- T_c superconductors, Electronic Structure', Proceedings of the International Symposium on the Electronic Structure of High T_c Superconductors, pp181 (eds. A. Bianconi and A. Marcelli, Pergamon, Oxford, 1989).
 25. J. Zaanen, M. Alouani and O. Jepsen, 'X-ray Absorption of $YBa_2Cu_3O_7$: a Band Picture.', Phys. Rev. B **40**, 837 (1989).
 26. J. Zaanen and O. Gunnarsson, 'Charged Magnetic Domain Lines and the Magnetism of the High- T_c Superconducting Oxides', Phys. Rev. B **40**, 7391 (1989).
 27. J. Zaanen and O. Gunnarsson, 'Local Spin Screening in the High T_c Superconductors', Physica C **162-164**, 821 (1989).
 28. L. F. Feiner and J. Zaanen, 'Charged Vortices in the Negative U Hubbard Model', Physica C **162-164**, 777 (1989).
 29. L. F. Feiner and J. Zaanen, 'Orbital Dynamics and Jahn-Teller Coupling in the CuO_2 planes of the High T_c cuprates; in 'Springer Series of Solid State Sciences', Proc. of the International Winter-school on Electronic Properties of High Temperature Superconductors, Kirchberg, Austria (Springer, Heidelberg, 1990).
 30. J. Zaanen and G. A. Sawatzky, 'Systematics in Band Gaps and Optical Spectra of 3d Transition Metal Compounds', J. Sol. State Chem. **88**, 8 (1990).
 31. J. Zaanen and G. A. Sawatzky, 'Photoemission and the Electronic Structure of 3d Transition Metals', Prog. Theor. Phys. Suppl. **101**, 231 (1990).
 32. J. Zaanen, A. M. Oles and L. F. Feiner, 'Spin Fluctuations and Orbital Dynamics in Cuprates', in NATO ASI Series B246 'Dynamics of Magnetic Fluctuations in High-Temperature Superconductors' (Plenum Press, New York, 1991).
 33. A. M. Oles, J. Zaanen and V. Drchal, 't-J Model for Triplet Holes', Int. J. Mod. Phys. B **5**, 131 (1991).
 34. V. I. Anisimov, J. Zaanen and O. K. Andersen, 'Band Theory and Mott Insulators: Hubbard U instead of Stoner I', Phys. Rev. B **44**, 943 (1991).
 35. C. M. Varma, J. Zaanen and K. Raghavachari, 'Superconductivity in the Fullerenes', Science, **254**, 989 (1991).
 36. A. M. Oles, J. Zaanen and P. Horsch, 'Triplet Hole Propagation

- and High- T_c Superconductivity', *Physica C* **185-189**, 1603 (1991).
37. J. Zaanen, 'Theory of Correlated Holes (and Electrons): from Satellites to Luttinger Liquids', Chapter 4 in 'Unoccupied Electronic States' (Springer Topics in Applied Physics 69, eds. J. C. Fuggle and J. E. Inglesfield, Springer, Heidelberg, 1992).
 38. V. I. Anisimov, M. A. Korotin, J. Zaanen and O. K. Andersen, 'Spin-bags, Polarons and Impurity Potentials in $La_{2-x}Sr_xCuO_4$ from first principles', *Phys. Rev. Lett.* **68**, 345 (1992).
 39. T. T. M. Palstra, R. C. Haddon, A. F. Hebard and J. Zaanen, 'Electronic Transport Properties of K_3C_{60} ', *Phys. Rev. Lett.*, **68**, 1054 (1992).
 40. J. Zaanen, A. M. Oles and P. Horsch, 'Generalizing the t-J model: Triplet Holes', *Phys. Rev. B* **46**, 5798 (1992).
 41. O. Gunnarsson and J. Zaanen, 'Impurity Spin Screening in Low Density Fermi Liquids', *Phys. Rev. B* **46**, 15019 (1992).
 42. C. M. Varma and J. Zaanen, 'Fullerene superconductivity and the dynamic Jahn-Teller effect - response', *Science* **255**, 1490 (1992).
 43. I. I. Mazin, O. K. Andersen, A. I. Liechtenstein, O. Jepsen, V. P. Antropov, S. N. Rashkeev, V. I. Anisimov, J. Zaanen, R. O. Rodriguez and M. Methfessel, 'Density Functional Theory for Phonons, Electrons and their Interaction in $YBa_2Cu_3O_7$ ', Proc. 'Lattice Effects in High Temperature Superconductors', Santa Fe (World Scientific, Singapore, 1993).
 44. P. B. Littlewood, J. Zaanen, G. Aeppli and H. Monien, 'Spin Fluctuations in a Two Dimensional Marginal Fermi-Liquid', *Phys. Rev. B* **48**, 487 (1993).
 45. T. T. M. Palstra, M. L. Steigerwald, A. P. Ramirez, Y.-U. Kwon, S. M. Stuczynski, L. F. Schneemeyer, J. V. Waszczak and J. Zaanen, 'Electron Correlations on a Mesoscopic Scale: Magnetic Properties of Transition Metal-Telluride Cluster Compounds', *Phys. Rev. Lett.* **71**, 1768 (1993).
 46. J. Zaanen and A. M. Oleś, 'Carriers Binding to Excitons: Crystal Field Excitations in Doped Mott-Hubbard Insulators', *Phys. Rev. B* **48**, 7197 (1993).
 47. J. Bala, A. M. Oleś and J. Zaanen, 'Zhang-Rice Localization, Quasiparticle Dispersions and the Photoemission of NiO', *Phys. Rev. Lett.* **72**, 2600 (1994).
 48. J. Bala, A. M. Oleś and J. Zaanen, 'Zhang-Rice Localization and Quasiparticles in CuO_2 planes', *Physica C* **235**, 2291 (1994).

49. A. M. Oleś and J. Zaanen, ‘Magnetic Phases and Generalized $t - J$ Models in doped Mott-Hubbard Insulators’, *Acta Physica Polonica A* **85**, 145 (1994).
50. A. M. Oleś and J. Zaanen, ‘Spin-orbital Models and d-d Excitons in doped Mott-Hubbard Insulators’, *Acta Physica Polonica B* **24**, 825 (1994).
51. T. T. M. Palstra, M. L. Steigerwald, A. P. Ramirez and J. Zaanen, ‘Electron Correlations in Transition Metal-Telluride Cluster Compounds’, *Physica B* **199-200**, 619 (1994).
52. J. Zaanen and P. B. Littlewood, ‘Freezing Electron Correlations by Polaronic Instabilities in Doped La_2NiO_4 ’, *Physical Review B* **50**, 7222 (1994).
53. A. M. Oleś, J. Bala and J. Zaanen, ‘ $t - J$ Model and Quasiparticles in NiO and CuO ’, in: *Superconductivity and strongly correlated electron systems* (eds. C. Noce and A. Romano, World Scientific, Singapore, 1994).
54. J. Bala, A. M. Oleś and J. Zaanen, ‘Spin Polarons in the $t - t' - J$ Model’, *J. Magn. Magn. Mat.* **140**, 1939 (1995).
55. J. Bala, A. M. Oleś and J. Zaanen, ‘Spin Polarons in the $t - t' - J$ Model’, *Phys. Rev. B* **52**, 4597 (1995).
56. L. F. Feiner, A. M. Oleś and J. Zaanen, ‘Quantum Fluctuations in the d^9 Model’, *J. Magn. Magn. Mat.* **140**, 1941 (1995).
57. A. M. Oleś, L. F. Feiner and J. Zaanen, ‘Effective d^8 model: Phase Diagram’, *J. Magn. Magn. Mat.* **140**, 1269 (1995).
58. A. I. Liechtenstein, V. I. Anisimov and J. Zaanen, ‘Density Functional Theory and Strong Interactions: Orbital Ordering in Mott-Hubbard Insulators’, *Phys. Rev. B* **52**, 5467 (1995).
59. J. Bala, A. M. Oleś and J. Zaanen, ‘Quasiparticles in Strongly Correlated Models of Transition Metal Compounds’, *Mol. Phys. Rep.* **12**, 11 (1995).
60. E. Pellegrin, C. T. Chen, J. Zaanen and J. Fink, ‘Symmetry of hole states in $La_{2-x}Sr_xCuO_{4+\delta}$ and $La_{2-x}Sr_xNiO_{4+\delta}$ ’, *Physica B* **209**, 487 (1995).
61. E. Pellegrin, J. Zaanen, H.-J. Lin, G. Meigs, C. T. Chen, G.-H. Ho, H. Eisaki and S. Uchida, ‘ $O1s$ X-ray Absorption of $La_{2-x}Sr_xNiO_4$: Holes, Polarons and Excitons’, *Phys. Rev. B* **53**, 10667 (1996).
62. J. Zaanen, M. L. Horbach and W. van Saarloos, ‘Charged Domain Wall Dynamics in Doped Antiferromagnets and the Spin Fluctuations in Cuprate Superconductors’, *Phys. Rev. B* **53**, 8671 (1996)

63. J. Zaanen and A. M. Oleś, ‘Striped Phase in the Cuprates as a Semiclassical Phenomenon’, Festschrift Fulde, Ann. Physik **5**, 224 (1996).
64. H. Eskes, R. Grimberg, W. van Saarloos and J. Zaanen, ‘Quantizing Charged Magnetic Domain Walls: Strings on a Lattice’, Phys. Rev. B **54**, R724 (1996).
65. J. Bala, A. M. Oleś and J. Zaanen, ‘Quasiparticles in the spin-fermion model for CuO_2 planes’, Phys. Rev. B **54**, 10161 (1996).
66. J. Zaanen, O. Y. Osman, H. Eskes and W. van Saarloos, ‘Dynamical stripe correlations in cuprate superconductors’, J. Low Temp. Phys. **105**, 569 (1996).
67. A. M. Oleś, L. F. Feiner and J. Zaanen, ‘Phase diagram of the spin-orbital model’, Acta Phys. Pol. A **92**, 367 (1997).
68. J. Zaanen, ‘Quantum Werelden, Klein en Groot’, jaarboek vereniging van Akademie onderzoekers, 1997.
69. L. F. Feiner, A. M. Oleś and J. Zaanen, ‘Quantum melting of magnetic order due to orbital fluctuations’, Phys. Rev. Lett. **78**, 2799 (1997).
70. C. N. A. van Duin and J. Zaanen, ‘The origin of the quantum-critical transition in the bilayer Heisenberg model’, Phys. Rev. Lett. **78**, 3019 (1997).
71. A. M. Oleś and J. Zaanen, ‘Quadrupling of unit cell in half-filled domain walls in the cuprates’, Physica B **230-232**, 925 (1997).
72. A. M. Oleś, J. Zaanen and L. F. Feiner, ‘Spin liquid stabilized by orbital degeneracy’, Mol. Phys. Rep. **17**, 185 (1997).
73. J. Zaanen and W. van Saarloos, ‘Dynamical stripe correlations and the spin fluctuations in cuprate superconductors’, Physica C **282-287**, 178 (1997).
74. T. T. M. Palstra, A. P. Ramirez, S.-W. Cheong, B. R. Zegarski, P. Schiffer and J. Zaanen, ‘Transport Mechanisms in doped $LaMnO_3$: Evidence for Polaron Formation’, Phys. Rev. B **56**, 5104 (1997).
75. C. N. A. van Duin and J. Zaanen, ‘Charge- versus spin driven stripe order: the role of transversal spin fluctuations’, Phys. Rev. Lett. **80**, 1513 (1998).
76. J. Zaanen, ‘Current ideas on the origin of stripes’, J. Phys. Chem. Sol. **59**, 1769 (1998).
77. H. Eskes, O. Y. Osman, R. Grimberg, W. van Saarloos and J. Zaanen, ‘Charged domain walls as quantum strings living on a

- lattice', Phys. Rev. B **58**, 6963-6981 (1998).
78. L. F. Feiner, A. M. Oles and J. Zaanen, 'Quantum disorder versus order-out-of-disorder in the Kugel-Khomskii model', J. Phys. Cond. Mat. **10**, L555 (1998)
 79. J. Zaanen, O. Y. Osman and W. van Saarloos, 'Metallic stripes: separation of charge-, spin-, and string fluctuation', Phys. Rev. B **58**, R11868 (1998).
 80. A. M. Oleś, L. F. Feiner and J. Zaanen, 'Valence Bond Solids in Three Dimensions', J. Magn. Magn. Mat., in press (1999)
 81. J. Tworzydło, O. Y. Osman, C. N. A. van Duin and J. Zaanen, 'Quantum magnetism in the stripe phase: bond- versus site order', Phys. Rev. B **59**, 115 (1999).
 82. O. Y. Osman, W. van Saarloos and J. Zaanen, 'Spontaneous orientation of a quantum lattice string', in: "Stripes and related phenomena", edited by A. Bianconi and N. L. Saini (Kluwer, New York, 2000).
 83. J. Tworzydło, C. N. A. van Duin and J. Zaanen, 'Spin-only approach to quantum magnetism in the ordered stripe phase', in: "Stripes and related phenomena", edited by A. Bianconi and N. L. Saini (Kluwer, New York, 2000).
 84. J. Zaanen, 'Quantum phase transitions in cuprates: stripes and antiferromagnetic supersolids', Physica C **317-318**, 217 (1999).
 85. J. Zaanen, 'Classical frustration and quantum disorder in spin-orbital models', J. Zaanen, L. F. Feiner and A. M. Oleś, Mat. Sci. Eng. B **63**, 140 (1999).
 86. I. M. Abu-Shiekh, O. O. Bernal, A. A. Menovsky, H. B. Brom and J. Zaanen, 'Similarity of slow stripe fluctuations between Sr-doped cuprates and oxygen doped nickelates', Phys. Rev. Lett. **83**, 3309 (1999).
 87. J. Zaanen, 'Superconductivity: self-organized one dimensionality', Science **286**, 251 (1999).
 88. J. Bala, A.M. Oles and J. Zaanen, 'Origin of band and localized electron states in photoemission of NiO', Phys. Rev. B **61**, 13573-13587 (2000).
 89. J. Zaanen, 'High-temperature superconductivity - Stripes defeat the Fermi liquid', Nature **404**, 714-715 (2000).
 90. A.M. Oles, L.F. Feiner and J. Zaanen, 'Quantum melting of magnetic long-range order near orbital degeneracy: Classical phases and Gaussian fluctuations', Phys. Rev. B **61**, 6257-6287 (2000).

91. C.N.A. van Duin and J. Zaanen, 'Interplay of superconductivity and magnetism in strong coupling', *Phys. Rev. B* **61**, 3676-3690 (2000).
92. J. Zaanen, 'Order out of disorder in a gas of elastic quantum strings in 2+1 dimensions', *Phys. Rev. Lett.* **84**, 753-756 (2000).
93. M. Bosch, W. van Saarloos and J. Zaanen, 'Do shifting Bragg peaks reveal fractionally charged kinks?', *Phys. Rev. B* **63**, 2501 (2001)
94. J. Zaanen and Z. Nussinov, 'Stripes and nodal fermions as two sides of the same coin', in 'Open Problems in Strongly Correlated Electron Systems' (Nato Science Series II/15, eds. J. Bonca, P. Prelovsek, A. Ramsak and S. Sarkar, Kluwer Ac. Pub., Dordrecht, 2001) .
95. G.B. Teitel'baum, I.M. Abu-Shiekah, O. Bakharev, H.B. Brom and J. Zaanen, 'Spin dynamics and ordering of a cuprate stripe-antiferromagnet', *Phys. Rev. B* **63**, 20507 (2000).
96. H.B. Brom, I.M. Abu-Siekah, O. Bakharev, O.O. Bernal, P.H. Kes, Ming-Li, E.G. Nikolaev, G.B. Teitel'Baum, A.A. Nugroho, A.A. Menovsky and J. Zaanen, 'Stripe and spin dynamics in hole doped La₂NiO₄, La₂CuO₄, Bi₂Sr₂CaCu₂O₈ and electron doped Nd_{1.85}Ce_{0.15}CuO₄ seen by nuclear resonance', *Int. J. Mod. Phys. B* **14**, 3368 (2000).
97. S.I. Mukhin, W. van Saarloos and J. Zaanen, 'The gas of elastic quantum strings in 2+1 dimensions: finite temperatures', submitted *Phys. Rev. B* **64**, 115105 (2001).
98. J. Zaanen, O.Y. Osman, H.V. Kruis, Z. Nussinov and J. Tworzydło, 'The geometric order of stripes and Luttinger liquids', *Phil. Mag. B* **81**, 1485 (2001).
99. J. Zaanen, 'High Temperature superconductivity – Quantum salad dressing', *Nature* **415**, 379 (2002).
100. I. Martin, A.V. Balatsky and J. Zaanen, 'Impurity states and interlayer tunneling in high temperature superconductors', *Phys. Rev. Lett.* **88**, 097003 (2002).
101. J. Zaanen, 'Why high T_c is exciting', *Annales Universitatis Mariae Curie-Sklodowska Lublin - Polonia* **57**, 9 - 22 (2002).
102. Z. Nussinov and J. Zaanen, 'Stripe fractionalization I: the generation of Ising local symmetry', *J. Phys. IV France* **12**, Pr9-245 (2002).
103. J. Zaanen and Z. Nussinov, 'Stripe fractionalization II: the quan-

- tum spin nematic and the Abrikosov lattice', *Physica Status Solidi B* **236**, 332 (2003).
104. J. Zaanen, 'Superconductivity: pebbles in the nodal pond', *Nature* **422**, 569 (2003).
 105. D. van der Marel, H.J.A. Molegraaf, J. Zaanen, Z. Nussinov, F. Carbone, A. Damascelli, H. Eisaki, M. Greven, P.H. Kes and M.Li, 'Quantum critical behaviour in a high-T-c superconductor', *Nature* **425**, 271 (2003).
 106. H.B. Brom and J. Zaanen, 'Magnetic Ordering phenomena and dynamic fluctuations in cuprate superconductors and insulating nickelates', *Handbook of Magnetic Materials*, Vol. 11, 379 (ed. K.H.J Buschow, Elsevier Science B.V., 2003).
 107. J. Zaanen, Z. Nussinov and S.I. Mukhin, 'Duality in 2+1D quantum elasticity: superconductivity and quantum nematic order', *Annals of Physics* **310**, 181 (2004).
 108. H.V. Kruis, I.P. McCulloch, Z. Nussinov and J. Zaanen, 'Geometry and topological order in the Luttinger liquid state', *Europhys. Lett.* **65**, 512 (2004).
 109. H. Kleinert and J. Zaanen, 'World Nematic Crystal Model of Gravity Explaining the Absence of Torsion', *Phys. Lett. A* **324**, 361 (2004).
 110. H.V. Kruis, I.P. McCulloch, Z. Nussinov and J. Zaanen, 'Geometry and the Hidden Order of Luttinger Liquids: the Universality of Squeezed Space', *Phys. Rev. B* **70**, 075109 (2004).
 111. O.N. Bakharev, I.M. Abu-Shiekh, H.B. Brom, A.A. Nugroho, I.P. McCulloch and J. Zaanen, 'NMR evidence for two-step phase-separation in $Nd_{1.85}Ce_{0.15}CuO_{4-\delta}$ ', *Phys. Rev. Lett.* **93**, 037002 (2004). (2004).
 112. J. Zaanen and B. Hosseinkhani, 'Thermodynamics and quantum criticality in cuprate superconductors', *Phys. Rev. B* **70**, 230401 (2004).
 113. J. Zaanen, 'Superconductivity – Why the Temperature is High', *Nature* **430**, 512 (2004).
 114. B. Hosseinkhani and J. Zaanen, 'Quantum Criticality and the Metal-Insulator in 2D: a Critical Test', *cond-mat/0408573* (2004).
 115. A. Diller, Alia, E. Roy, P. Gast, H.J. van Gorkom, J. Zaanen, H.J.M. de Groot, C. Glaubitz and J. Matysik, 'Photo-CIDNP solid state NMR on photosystem I and II: what makes P680 special?', *Photosynthesis Research* **84**, 303 (2005).

116. J. van Wezel, J. van den Brink and J. Zaanen, 'an Intrinsic Limit to Quantum Coherence due to Spontaneous Symmetry Breaking', *Phys. Rev. Lett.* **94**, 230401 (2005).
117. J. Zaanen, 'Journal Club', *Nature* **436**, 445 (2005).
118. J. van Wezel, J. van den Brink and J. Zaanen, 'Quantumbits verliezen Spontaan Quantuminformatie', *NTVN* **71**, 293 (2005).
119. J. Zaanen, 'Technology Meets Quantum Criticality', *Nature Materials* **4**, 655 (2005).
120. N. Mannella, W. Yang, X.J. Zhou, H. Zheng, J.F. Mitchell, J. Zaanen, T.P. Devereaux, N. Nagaosa and Z.X. Shen, 'Nodal Quasiparticle in pseudogapped colossal magnetoresistive manganites', *Nature* **438**, 474 (2005).
121. C.J. Wu, S.C. Zhang and J. Zaanen, 'Spin-Orbit Coupling Induced Magnetism in the d-Density Wave State of $La_{2-x}Ba_xCuO_4$ superconductors', *Phys. Rev. Lett.* **95**, 247007 (2005).
122. W. Meevasana, N.J.C. Ingle, D.H. Lu, J.R. Shi, F. Baumberger, K.M. Shen, W.S. Lee, T. Cuk, H. Eisaki, T.P. Devereaux, N. Nagaosa, J. Zaanen and Z.X. Shen, 'Doping dependence of the coupling of electrons to bosonic modes in the single-layer Bi-cuprate, Bi2201', *Phys. Rev. Lett.* **96**, 2995 (2006).
123. J. Zaanen, S Chakravarty, T. Senthil P. Anderson, P. Lee, J. Schmalian, M. Imada, D. Pines, M. Randeria, C. Varma, M. Vojta and M. Rice, 'Towards a complete theory of high T-c', *Nature Physics*, **2**, 138 (2006).
124. J. Zaanen, 'Superconductivity - Quantum stripe search', *Nature* **440**, 1118 (2006).
125. V. Cvetkovic, Z. Nussinov and J. Zaanen, 'Topological kinematic constraints: dislocations and the glide principle', *Philosophical Magazine*, **86**, 2995 (2006).
126. V. Cvetkovic and J. Zaanen, 'Quantum smectic as a dislocation Higgs phase', *Phys. Rev. Lett.* **97**, 045701 (2006).
127. J. van Wezel, J. Zaanen and J. van den Brink, 'Relation between decoherence and spontaneous symmetry breaking in many-particle qubits', *Phys. Rev. B* **74**, 094430 (2006).
128. W. Meevasana, T.P. Devereaux, N. Nagaosa, Z.X. Shen and J. Zaanen, 'Calculation of overdamped c-axis charge dynamics and the coupling to polar phonons in cuprate superconductors', *Phys. Rev. Lett.* **74**, 174524 (2006).
129. V. Cvetkovic and J. Zaanen, 'Vortex duality: Observing the dual

- nature using order propagators', Phys. Rev. B **74**, 134504 (2006).
130. J. Zaanen, 'Watching rush hour in the world of electrons', Science **315**, 1372 (2007).
 131. W. Meevasana, X.J. Zhou, S. Sahrakorpi, W.S. Lee, W.L. Yang, K. Tanaka, N. Mannella, T. Yoshida, D.H. Lu, Y.L. Chen, R.H. He, H. Lin, S. Komiya, Y. Ando, F. Zhou, W.X. Ti, J.W. Xiong, Z.X. Zhao, T. Sasagawa, T. Kakeshita, K. Fujita, S. Uchida, H. Eisaki, A. Fujimori, Z. Hussain, R.S. Markiewicz, A. Bansil, N. Nagaosa, J. Zaanen, T.P. Devereaux and Z.X. Shen, 'Hierarchy of multiple many-body interaction scales in high-temperature superconductors', Phys. Rev. B **75**, 174506 (2007).
 132. J. Zaanen, 'Theoretical physics - A black hole full of answers', Nature **448**, 1000 (2007).
 133. F. Kruger, S.D. Wilson, L. Shan, S.L. Li, Y. Huang, H.H. Wen, S.C. Zhang, P.C. Dai and J. Zaanen, 'Magnetic fluctuations in n-type high-T_c superconductors reveal breakdown of fermiology: Experiments and Fermi-liquid/RPA calculations', Phys. Rev. B **76**, 094506 (2007),
 134. S.I. Mukhin, A. Meszaros, J. Zaanen and F.V. Kusmartsev, 'Enhanced electronic polarizability of metallic stripes and the universality of the bond-stretching phonon anomaly in high-temperature cuprate superconductors', Phys. Rev. **76**, 174521 (2007).
 135. N. Mannella, W.L. Yang, K. Tanaka, X.J. Zhou, H. Zheng, J.F. Mitchell, J. Zaanen, T.P. Devereaux, N. Nagaosa, Z. Hussain and Z.X. Shen, 'Polaron coherence condensation as the mechanism for colossal magnetoresistance in layered manganites', Phys. Rev. B **76**, 233102 (2007).
 136. B.W.A. Leurs, Z. Nazario, D.I. Santiago and J. Zaanen, 'Non-Abelian hydrodynamics and the flow of spin in spin-orbit coupled substances', Ann. Phys. (NY) (in press, 2007; ArXiv 0705.2953).
 137. Jasper van Wezel, Tjerk Oosterkamp and Jan Zaanen, 'Towards an Experimental Test of Gravity-induced Quantum State Reduction', Phil. Mag. B (in press, 2007; ArXiv 0706.3976).
 138. B.W.A. Leurs and J. Zaanen, 'The $SU(2)$ Gauge Theory of the Substantially Doped Mott-Insulator: the phase separated d+s superconductor', cond-mat/0702364 (2007).
 139. B.W.A. Leurs, K.E. Luna, and J. Zaanen, 'Inhomogeneous states and nodal fermions in the $SU(2)$ gauge theory', ArXiv 0707.3709 (2007).

140. V. Cvetkovic, Z. Nussinov, S. Mukhin and J. Zaanen, 'Observing the fluctuating stripes in high-T-c superconductors', *Europhys. Lett.* **2**, 27001 (2008).
141. J. Zaanen, 'Perspective - Quantum critical electron systems: The uncharted sign worlds', *Science* **319**, 1205 (2008).
142. J. Zaanen, F. Krueger, J.-H. She, D. Sadri and S. I. Mukhin, 'Pacifying the Fermi-liquid: battling the devious fermion signs', *Iranian J. Phys.* (in press, 2008; ArXiv 0802.2455)
143. K. Wu, Z.Y. Weng and J. Zaanen, 'On the sign structure of doped Mott insulators', *Phys. Rev. B* (in press, 2008; ArXiv: 0802.0273).
144. F. Krueger and J. Zaanen, 'Fermionic quantum criticality and the fractal nodal surface', *subm. Phys. Rev. B* (ArXiv: 0804.2161).
145. A.S. Mishchenko, N. Nagaosa, Z.-X. Shen, G. De Filippis, V. Cataudella, T.P. Devereaux, C. Bernhard, K.W. Kim and J. Zaanen, 'Charge dynamics of doped holes in high Tc cuprates - A clue from optical conductivity', *Phys. Rev. Letters* (in press, 2008; ArXiv: 0804.0479).