



Prof. A. Quandt

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Organisational Unit: School of Physics
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Research Interests

Computational and Theoretical Solid State Physics.

Publications

Book chapters:

A. Quandt, M. Ferrari, A. Chiappini and A. Leymann: Glass Nanospheres and Photonic Crystals, to be published (2013).

A. Quandt, M. Ferrari and G. C. Righini: Towards Integrated Nanoelectronic and Photonic Devices, in: *New Trends in Nanotechnology and Fractional Calculus Applications*, Z. B. Guvenc, D. Baleanu, J. A. Tenreiro Machado (Eds.), Springer, Berlin (2010), 25 ff.

A. Quandt: Ab initio Approach to the Many-Electron Problem, in: *Computational Many-Particle Physics (Lecture Notes in Physics)*, H. Fehske, R. Schneider, A. Weisse (Eds.), Springer, Berlin (2008), p. 415 ff.

A. Quandt: Ab initio Methods applied to Structure Optimization and Microscopic Modelling, in: *Computational Many-Particle Physics (Lecture Notes in Physics)*, H. Fehske, R. Schneider, A. Weisse (Eds.), Springer, Berlin (2008), p. 437 ff.

Review Articles:

A. Quandt, Viewpoint: Quasicrystals, Meet Topological Insulators, *Physics* 5, 99 (2012).

A. Quandt and I. Boustani, Boron nanotubes, *ChemPhysChem* 6, p. 2001 ff. (2005).

Some Recent Articles:

A. Every, R. Warmbier and A. Quandt, *A Model for Terahertz Plasmons in Graphene*, *Optical and Quantum Electronics* 48, 1 (2016).

F. Mohammed and A. Quandt, *A simple perturbative tool to calculate plasmonic photonic bandstructures*, *Journal of Optical Materials*, accepted (2016).



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- R. Warmbier and A. Quandt, *Plasmonic and Dielectric Properties of Ideal Graphene*, *Comp. Mater. Sci.* 114, 18 (2016).
- G. Manyali, R. Warmbier and A. Quandt, *First-principles studies of hypothetical Si_3N_2* , *Comp. Mater. Sci.* 96, 140 (2015).
- G. Manyali, R. Warmbier and A. Quandt, *First-principles studies of the structural, electronic and optical properties of dinitrides CN_2 , SiN_2 and GeN_2* , *Comp. Mater. Sci.* 95, 706 (2014).
- R. Warmbier, A. Quandt and G. Seifert, *Dielectric Properties of Selected Metal-Organic Frameworks*, *J. Phys. Chem. C* 118, 11799 (2014).
- R. Warmbier, F. Mohammed and A. Quandt, *Optical and other materials properties of SiO_2 from ab initio studies*, *Opt. Eng.* 53, 071808 (2014).
- C. Ozdogan, J. Kunstmann and A. Quandt, *Localization of metallicity and magnetic properties of graphene and of graphene nanoribbons doped with boron clusters*, *Phil. Mag.* 94, 1841 (2014).
- G. S. Manyali, R. Warmbier and A. Quandt, *Computational study of the structural, electronic and optical properties of $\text{M}_2\text{N}_2\text{NH:M}$ ($\text{M} = \text{C}, \text{Si}, \text{Ge}$)*, *Comp. Mater. Sci.* 79, 710 (2013).
- G. S. Manyali, R. Warmbier and A. Quandt, *Ab-initio Study of elastic properties of super hard and graphitic structures of C_3N_4* , *Comp. Mater. Sci.* 69, 299 (2013).
- S. I. Ben-Abraham, A. Quandt and D. Shapira, *Multidimensional Paperfolding Systems*, *Acta Cryst.* A69, 123 (2013).
- R. Warmbier, G. S. Manyali and A. Quandt, *Surface Plasmon Polaritons in Lossy Uniaxial Anisotropic Materials*, *Phys. Rev.* B85, 085442 (2012).
- J. Kunstmann, C. Özdogan, A. Quandt and H. Fehske, *Stability of Edge States and Edge Magnetism in Graphene Nanoribbons*, *Phys. Rev.* B83, 045414 (2011).
- S. I. Ben-Abraham and A. Quandt, *Aperiodic sequences and notions of order and disorder*, *Phil. Mag.* 91, 2718 (2011).
- A. Quandt und H.A.M. Leymann, *Simulation of Complex Dielectric Materials*, *Advances in Science and Technology* 71, p. 58 ff. (2010).
- A. Quandt and C. Özdogan, *Feynman, Biominerals and Graphene - Basic Aspects of Nanoscience*, *Communications in Nonlinear Science and Numerical Simulations* 15, 1575 (2010).
- C. Armellini, A. Chiappini, A. Chiasera, M. Ferrari, Y. Jestin, E. Moser, G. Nunzi Conti, S. Pelli, A. Quandt, G. C. Righini and C. Tosello, *Er^3 -activated nanocomposite photonic classes and confined structures*, *Optical Materials* 31, p. 1071 (2009).
- A. Quandt, C. Özdogan, J. Kunstmann and H. Fehske, *Functionalizing graphene by embedded boron clusters*, *Nanotechnology* 19, p. 335707 ff. (2008).



J. Kunstmann, A. Quandt and I. Boustani, An approach to control the radius and the chirality of nanotubes, *Nanotechnology* 18, p. 155703 ff. (2007).

Special Interests

Nanostructured ultrahard materials
Optical properties of ultrahard materials
Numerical studies of ultrahard materials
Development of numerical simulations tools

Affiliations

Associate member of the National Institute for Theoretical Physics (NITheP)
Member of the Centre for Theoretical Physics (CTP), University of the Witwatersrand
Associate member of the Centro Fermi (Rome, Italy)

Other Interests

Acting Chair of the Materials for Energy Research Group (MERG), University of the Witwatersrand

Teaching

PHYS 1014 (2012/2013/2014/2015), SOLID STATE PHYSICS (Honours, 2013-now)