
Contents

Physics

<i>P. Nielaba</i>	1
-------------------------	---

Spin-Liquid Phase in the Hubbard Model on the Honeycomb Lattice <i>Z.Y. Meng, T.C. Lang, S. Wessel, F.F. Assaad, and A. Muramatsu</i>	5
---	---

Massive and Massless Four-Loop Integrals <i>J.H. Kühn, P. Marquard, M. Steinhauser, and M. Tentyukov</i>	19
---	----

Ligand Protected Gold Alloy Clusters as Superatoms <i>M. Walter</i>	29
--	----

The Chiral Critical Surface of QCD <i>Ph. de Forcrand and O. Philipsen</i>	43
---	----

Mesoscopic Simulations of Polyelectrolyte Electrophoresis in Nanochannels <i>J. Smiatek and F. Schmid</i>	53
--	----

The SuperN-Project: An Update on Core-Collapse Supernova Simulations <i>B. Müller, L. Hudepohl, A. Marek, F. Hanke, and H.-Th. Janka</i>	69
---	----

Higgs Boson Mass Bounds from a Chirally Invariant Lattice Higgs-Yukawa Model <i>P. Gerhold, K. Jansen, and J. Kallarackal</i>	85
--	----

Dust, Chemistry & Radiation Transport in MRI-Turbulent Protoplanetary Discs <i>M. Flaig, W. Kley, R. Kissman, and P. Ruoff</i>	103
---	-----

Solid State Physics

<i>W. Hanke</i>	117
-----------------------	-----

Organic-Metal Interface: Adsorption of Cysteine on Au(110) from First Principles <i>B. Höffling, F. Ortmann, K. Hannewald, and F. Bechstedt</i>	119
<i>Ab-initio</i> Characterization of Electronic Properties of PbTe Quantum Dots Embedded in a CdTe Matrix <i>R. Leitsmann and F. Bechstedt</i>	135
Si(111)-In Nanowire Optical Response from Large-scale Ab Initio Calculations <i>W.G. Schmidt, S. Wippermann, E. Rauls, U. Gerstmann, S. Sanna, C. Thierfelder, M. Landmann, and L.S. dos Santos</i>	149
Laser Ablation of Metals <i>J. Roth, C. Trichet, H.-R. Trebin, and S. Sonntag</i>	159
Conductance and Noise Correlations of Correlated Nanostructures <i>A. Branschädel and P. Schmitteckert</i>	169
Cu Substitutionals and Defect Complexes in the Lead-Free Ferroelectric KNN <i>S. Körbel and C. Elsässer</i>	181
Reacting Flows <i>D. Kröner</i>	189
Scalar Mixing in Droplet Arrays in Stagnant and Convective Environments <i>A. Kronenburg, M.R.G. Zoby, S. Navarro-Martinez, and A.J. Marquis</i> ..	191
Euler-Lagrange Simulation of a LOX/H ₂ Model Combustor with Single Shear Coaxial Injector <i>M. Lempke, P. Gerlinger, M. Rachner, and M. Aigner</i>	203
Simulation of Triflux Heat Exchangers in Utility Boilers <i>A. Matschke, M. Müller, U. Schnell, and G. Scheffknecht</i>	217
Computational Fluid Dynamics <i>S. Wagner</i>	229
Direct Numerical Simulation of Swept-Wing Laminar Flow Control Using Pinpoint Suction <i>T.A. Friederich and M.J. Kloker</i>	231
A Numerical Study of Turbulent Stably-Stratified Plane Couette Flow <i>M. García-Villalba, E. Azagra, and M. Uhlmann</i>	251

DNS of Unsteady Heat Transfer Increase on a Curved Surface Due to Wake-Induced Turbulence <i>D. von Terzi, L. Venema, H.-J. Bauer, and W. Rodi</i>	263
Application of a Novel Turbulence Generator to Multiphase Flow Computations <i>C. Huber, H. Gomaa, and B. Weigand</i>	273
Numerical Investigation on the Deformation of Droplets in High-Pressure Homogenizers <i>K. Kissling, S. Schütz, and M. Piesche</i>	287
Direct Numerical Simulation of Sediment Transport in Turbulent Open Channel Flow <i>C. Chan-Braun, M. García-Villalba, and M. Uhlmann</i>	295
Grid Sensitivity of LES Heat Transfer Results of a Turbulent Round Impinging Jet <i>S.O. Neumann, N. Uddin, and B. Weigand</i>	307
Large Eddy Simulations of a Jet in Crossflow <i>F.C.C. Galeazzo, P. Habisreuther, and N. Zarzalis</i>	327
The Impact of Secondary Mean Vortices on Turbulent Separation in 3D Diffusers <i>D. von Terzi, H. Schneider, and H.-J. Bauer</i>	339
Time-Dependent Three-Dimensional Simulation of the Turbulent Flow and Heat Transfer in Czochralski Crystal Growth Including the Three-Phase Boundary Movement <i>A. Raufeisen, M. Breuer, T. Botsch, and A. Delgado</i>	353
Numerical Investigation of Shock Wave Boundary-Layer Interaction Using a Zonal RANS-LES Ansatz <i>B. Roidl, M. Meinke, and W. Schröder</i>	369
Large Eddy Simulation of the Cyclic Variations in an Internal Combustion Engine <i>F. Magagnato, A. Walcker, and M. Gabi</i>	385
CFD-CSD-Coupled Simulations of Helicopter Rotors Using an Unstructured Flow Solver <i>F. Bensing, M. Keßler, and E. Krämer</i>	393
Wake Signature of Finite-Span Flapping Rigid Wings <i>J.E. Guerrero</i>	407

Computational Design Study of a 3D Hypersonic Intake for Scramjet Demonstrator Testing <i>B. Reinartz and M. Behr</i>	429
Characterization of Mixing in Food Extrusion and Emulsification Processes by Using CFD <i>M.A. Emin, K. Köhler, M. Schlender, and H.P. Schuchmann</i>	443
Transport and Climate <i>C. Kottmeier</i>	463
Modelling Regional Climate Change in Germany <i>P. Berg, H.-J. Panitz, G. Schädler, H. Feldmann, and C. Kottmeier</i>	467
Modelling the Extratropical Transition of Tropical Cyclones and Its Downstream Impact <i>C.M. Grams and S.C. Jones</i>	479
Global Long-Term MIPAS Data Processing: Some Aspects of the Dynamics of the Atmosphere from Lower Stratosphere to Lower Thermosphere <i>M. Kiefer, B. Funke, U. Grabowski, and A. Linden</i>	501
Miscellaneous Topics <i>W. Schröder</i>	515
Computer Simulation for Building Implosion Using LS-DYNA <i>G. Michaloudis, S. Mattern, and K. Schweizerhof</i>	519
Quaero Speech-to-Text and Text Translation Evaluation Systems <i>S. Stüker, K. Kilgour, and J. Niehues</i>	529
Molecular Modeling of Hydrogen Bonding Fluids: Transport Properties and Vapor-Liquid Coexistence <i>J. Vrabec, G. Guevara-Carrion, T. Merker, and H. Hasse</i>	543
Software Framework UG: Parallel Simulation of a Three-Dimensional Benchmark Problem for Thermohaline-Driven Flow <i>M. Lampe, A. Grillo, and G. Wittum</i>	553
Tailored Usage of the NEC SX-8 and SX-9 Systems in Satellite Geodesy <i>M. Roth, O. Baur, and W. Keller</i>	561
A Geodynamic Model of the Evolution of the Earth's Chemical Mantle Reservoirs <i>U. Walzer and R. Hendel</i>	573

Three-Dimensional Simulation of Rarefied Plasma Flows Using a High
Order Particle in Cell Method
*J. Neudorfer, T. Stindl, A. Stock, R. Schneider, D. Petkow, S. Roller,
C.-D. Munz, and M. Auweter-Kurtz* 593

High Performance Computing in Science and
Engineering '10

Transactions of the High Performance Computing
Center, Stuttgart (HLRS) 2010

Nagel, W.E.; Kröner, D.B.; Resch, M.M. (Eds.)

2011, XIII, 604 p., Hardcover

ISBN: 978-3-642-15747-9