Contents

Time-Dependent Density-Functional Theory: Features and Challenges, with a Special View on Matter Under Extreme Conditions ................................................................. 1
Carsten A. Ullrich

Thermal Density Functional Theory in Context .............................. 25
Aurora Pribram-Jones, Stefano Pittalis, E.K.U. Gross, and Kieron Burke

Innovations in Finite-Temperature Density Functionals ................. 61
Valentin V. Karasiev, Travis Sjostrom, Debajit Chakraborty,
James W. Dufty, Keith Runge, Frank E. Harris, and S.B. Trickey

Toward a Comprehensive Treatment of Temperature in Electronic Structure Calculations: Non-zero-Temperature Hartree-Fock and Exact-Exchange Kohn-Sham Methods ................. 87
Hannes Schulz and Andreas Görling

Quantum Monte Carlo Techniques and Applications for Warm Dense Matter ................................................................. 123
Ethan Brown, Miguel A. Morales, Carlo Pierleoni, and David Ceperley

The Structure of Warm Dense Matter Modeled with an Average Atom Model with Ion-Ion Correlations ................................................................. 151
D. Saumon, C.E. Starrett, J.A. Anta, W. Daughton, and G. Chabrier

Dynamical Structure Factor in High Energy Density Plasmas and Application to X-Ray Thomson Scattering ................................. 177
Carsten Fortmann

Progress in Warm Dense Matter and Planetary Physics ............... 203
Winfried Lorenzen, Andreas Becker, and Ronald Redmer
Diffusivity of Mixtures in Warm Dense Matter Regime .......................... 235
Tomorr Haxhimali and Robert E. Rudd

A Review of Wave Packet Molecular Dynamics ................................. 265
Paul E. Grabowski
Frontiers and Challenges in Warm Dense Matter
Graziani, F.; Desjarlais, M.P.; Redmer, R.; Tricrey, S.B. (Eds.)
2014, X, 282 p. 89 illus., 64 illus. in color., Hardcover
ISBN: 978-3-319-04911-3