



Theory Group Meeting of the SPARC Collaboration

ATOMIC PHYSICS IN STRONG FIELDS

17–18 July 2007, GSI Darmstadt



Coordinators: Stephan Fritzsche
Thomas Stöhlker

Organization: Steffi Luettgies

Scientific Program¹:

Thursday, July 17th

- 13:30 – 13:45 **Thomas Stöhlker**, GSI Darmstadt
Opening
- 13:45 – 14:15 **Thomas Beier**, GSI Darmstadt
Towards an eigenstate of the project operator: Status of the FAIR project
- 14:15 – 14:45 **Alexandre Gumberidze**, GSI Darmstadt
Atomic Physics at FAIR: Experimental Program of the SPARC Collaboration
- 14:45 – 15:15 **Vladimir Shabaev**, St. Petersburg
Bound-state QED in the Furry picture and beyond
- 15:15 – 16:00 COFFEE BREAK
- 16:00 – 16:30 **Krzysztof Pachucki**, Warschau
Nuclear structure correction to the hyperfine splitting
- 16:30 – 17:00 **Andrey Volotka**, Dresden
Hyperfine structure of Li- and B-like ions
- 17:00 – 17:30 **Dmitry Glazov**, St. Petersburg
g Factor of Heavy Ions: A New Access to the Fine Structure Constant
- 17:30 – 18:00 **Ulrich D. Jentschura**, Heidelberg
QED and the like: Atoms and precision physics hand in hand
- 18:00 – 18:30 **Carsten Müller**, Heidelberg
Relativistic quantum dynamics in strong laser fields
- 19:00 – 22:00 BUFFET

Wednesday, July 18th

- 09:00 – 09:20 **Jörg Eichler**, Berlin
Memorial for Walter E. Meyerhof
- 09:20 – 09:50 **Gerhard Baur**, Jülich
Very strong electromagnetic fields for a very short time: Pair production and ionization in relativistic heavy ion collisions
- 09:50 – 10:20 **Alexander Voitkiv**, Heidelberg
Ionization, excitation and loss in relativistic ion-atom collisions

¹Please, leave about 5 minutes for discussion from the scheduled time of your talk.

- 10:20 – 10:40 **Bennaceur Najjari**, Heidelberg
Four-body quantum dynamics of two-centre electronic transitions in relativistic ion-atom collisions
- 10:40 – 11:00 **Andrey Surzhykov**, Heidelberg
Ion-atom collisions at high- γ : The role of magnetic interactions
- 11:00 – 11:30 COFFEE BREAK
- 11:30 – 12:00 **Ingvar Lindgren**, Göteborg
Calculation of combined effect of QED and electron correlation in He-like systems
- 12:00 – 12:20 **Bijaya K. Sahoo**, Dresden
Atomic polarizabilities using the Fock-space relativistic coupled-cluster theory
- 12:20 – 12:40 **Chenzhong Dong**, Lanzhou
Excitation and ionization of neon-like ions
- 12:40 – 13:00 **Nicolai M. Kabachnik**, Bielefeld
Two-photon double photoionization of atoms
- 13:00 – 14:00 LUNCH
- 14:00 – 14:30 **Günter Wunner**, Stuttgart
Quantum Monte Carlo studies for the ground states of heavy atoms in neutron star magnetic fields
- 14:30 – 15:00 **Tom Kirchner**, Clausthal
Quantum mechanical calculations for multiple-electron loss of fast highly-charged ions in gas targets
- 15:00 – 15:20 **Colm T. Whelan**, Norfolk (Virginia)
Coincidence studies of collisions involving multicharged ions
- 15:20 – 15:40 **Adriana Gagy-Palfy**, Heidelberg
Resonant electron scattering on nuclei
- 15:40 – 16:10 COFFEE BREAK
- 16:10 – 16:40 **Joachim Reinhardt**, Frankfurt
Supercritical positrons - old and new results
- 16:40 – 17:10 **Alejandro Saenz**, Berlin
Collision processes involving antiprotons
- 17:10 – 17:40 **Eva Lindroth**, Stockholm
On the possibility of formation of antiprotonic ions via intermediate resonant states
- 17:40 – 18:00 **Stephan Fritzsche**, GSI Darmstadt
Conclusions