

SPARC

Topical Workshop 2017

11-14 September 2017, Caen, France

Scientific Program

Sunday, September 10th

| Time | |
|---------------|---------------------------------|
| 16h00 – 20h00 | Welcome Cocktail - Registration |

Monday, September 11th

| Time | | Duration |
|---|---|--|
| 8h30 | Registration - Inscription for the visit of GANIL/SPIRAL 2 facilities | 60' |
| Opening / Welcome Session Chairperson: J. Rangama | | |
| 9h30 | Welcome Speech | J. Rangama CIMAP 5' |
| 9h35 | Welcome Speech | N. Alahari GANIL 10+5' |
| 9h50 | Welcome Speech | A. Cassimi CIMAP 10+5' |
| 10h05 | GSI/FAIR | P. Giubellino GSI/FAIR 15+5' |
| 10h25 | SPARC | R. Schuch or T. Stöhlker Univ. Stockholm 15+5' |
| 10h45 | Coffee break | |

| Status of GSI and FAIR Facilities | | | |
|--|---|--|--------|
| Chairperson: | | | |
| 11h20 | Commissioning of CRYRING@ESR | M. Lestinsky GSI, Darmstadt | 20+5' |
| 11h45 | APPA cave, a multipurpose experimental area for atomic and plasma physics, materials science and biophysics at FAIR: a status report | A. Braeuning-Demian GSI, Darmstadt | 20+5' |
| 12h10 | Status of the SIS100 / Laser cooling | D. Winters GSI, Darmstadt | 20+5' |
| 12h35 | Status of the HESR | R. Sanchez GSI, Darmstadt | 20+5' |
| 13h00 | Lunch | | |
| International Landscape: Atomic Physics Activities Related to SPARC | | | |
| Chairperson: | | | |
| 14h30 | High-precision measurements of $n=2 \rightarrow n=1$ transition energies and level widths in He- and Be-like argon ion | J.P. Santos Univ. of Lisbon | 25'+5' |
| 15h00 | Tests of QED in few-electrons highly charged ions: status and perspectives | P. Indelicato LKB, ENS, UPMC | 25'+5' |
| 15h30 | Interaction of slow highly charged Xe^{q+} ions ($q = 15 - 40$) with metallic surfaces | D. Banas Univ. of Kielce | 20'+5' |
| 15h55 | Hyperfine spectroscopy experiment at the ESR : status and future plans | J. Ullmann GSI | 20'+5' |
| 16h20 | Coffee Break | | |
| Chairperson: | | | |
| 16h50 | HILTE – High intensity laser experiments on stored ions | S. Ringleb Univ. of Jena | 20'+5' |
| 17h15 | On the production of the $1s2s2p$ 2,4 P states in collisions of 0.5-1.25 MeV/u He-like mixed ($1s2$ 1S, $1s2s$ 3S) ionic states with gaseous targets | E. Benis Univ. of Ioannina | 20'+5' |
| 17h40 | APPA R&D – BMBF collaborative research in Germany | T. Stöhlker Univ. of Stockholm | 20'+5' |
| Collaboration Meeting | | | |
| 18h05 | Funding Situation: International and National, Common Funds, Status Reports, “BMBF Verbundforschung” | R. Schuch | 90` |
| 19h35 | SPARC Board Meeting | | 60` |

Tuesday, September 12th

| Time | | | Duration |
|---|--|---------------------------------------|----------|
| SPARC Experimental Proposals for 2018-2019 | | | |
| Chairperson: | | | |
| 9h30 | Measurement of the bound-state beta decay of bare ²⁰⁵ Tl ions | Y. Litvinov GSI, Darmstadt | 15`+5` |
| 9h50 | Nuclear astrophysics & atomic physics techniques | C. Bruno Univ. of Edinburgh | 15`+5` |
| 10h10 | Measurements of proton-induced reaction rates on radioactive isotopes for the astrophysical p process | C. Bruno Univ. of Edinburgh | 15`+5` |
| 10h30 | Coffee Break | | |
| Chairperson: | | | |
| 11h00 | Dielectronic Recombination of Low-Energy Nuclear Isomers: Towards Storage Ring Studies of the Nuclear Clock' Nucleus ²²⁹ Th | C. Brandau Univ. of Giessen | 15`+5` |
| 11h20 | Precision collision spectroscopy of Be-like ions at the CRYRING@ESR electron cooler | S. Schippers Univ. of Giessen | 15`+5` |
| 11h40 | Trapped Highly Charged Ions Interacting with X-rays | S. Bernitt Max Planck Society | 15`+5` |
| 12h00 | Energy determination of the $1s^2 2s_{1/2} \rightarrow 1s^2 2p_{3/2}$ radiative transition in Li-like uranium ions via resonant coherent excitation in crystal | A. Braeuning-Demian GSI, Darmstadt | 15`+5` |
| 12h20 | Laser spectroscopy of the (1s22s2p) 3P0 - 3P1 level splitting in Be-like krypton | D. Winters GSI, Darmstadt | 15`+5` |
| 12h40 | Optimizing the laser-ion interaction during laser cooling, using novel pulsed and cw laser systems | M. Bussmann GSI, Darmstadt | 15`+5` |
| 13h00 | Lunch | | |

SPARC Experimental Proposals for 2018-2019

Chairperson:

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|-------|---|-------------------------------|--------|
| 14h30 | Dielectronic Recombination-assisted laser spectroscopy: A new tool to investigate the hyperfine puzzle in Bi ⁸⁰⁺ , ⁸²⁺ | R. Sanchez GSI, Darmstadt | 15`+5` |
| 14h50 | Double-differential cross sections for electron emission in collisions of highly-charged ions with gaseous targets | S. Hagmann GSI, Darmstadt | 15`+5` |
| 15h10 | Electron Emission following 1s Adiabatic Ionization and Quasi-resonant 1s-1s Charge Transfer in Symmetric Heavy-Ion Atom Collisions | S. Hagmann GSI, Darmstadt | 15`+5` |
| 15h30 | Cooling and precision spectroscopy of ²⁰⁹ Bi ⁸²⁺ ion ensembles with the ARTEMIS and SPECTRAP experiments at the HITRAP facility | W. Quint GSI, Darmstadt | 15`+5` |
| 15h50 | Investigation of novel light phenomena observed for the first time during interaction of highly charged ions with a liquid droplet beam | N. Petridis GSI, Darmstadt | 15`+5` |
| 16h10 | Photoionization of C ⁺ ions at CRYRING | J. Rothhardt HIJ | 15`+5` |

16h30

Coffee Break

SPARC Experimental Proposals for 2018-2019

Chairperson:

| | | | |
|-------|---|------------------------|--------|
| 17h00 | The Ground-State Lamb Shift in the Heaviest Hydrogenlike Ion (U ⁹¹⁺): High Resolution X-ray Spectroscopy at the CRYRING electron cooler | G. Weber HiJ | 15`+5` |
| 17h20 | High-resolution differential Measurements Between Two-and Three-Electron Uranium Ions for High-Precision Tests of Strong-Field QED | M. Trassinelli INSP | 15`+5` |
| 17h40 | Scattering of relativistic vortex electrons | A. Surzhykov PTB | 15`+5` |
| 18h00 | Poster Session + Cocktail | | |

Wednesday, September 13th

| Time | | | Duration |
|---|--|-------------------------------|----------|
| Theory Chairperson: | | | |
| 9h30 | Nuclear excitation by two-photon electron transition | S. Fritzsche Univ. of Jena | 15'+5' |
| 9h50 | Electron-positron pair production in colliding laser pulses | I. Aleksandrov SPSU | 10'+5' |
| 10h05 | Relativistic approach for calculations of differential ionization cross sections in ion-atom collisions | A. Bondarev SPSU | 10'+5' |
| 10h20 | <i>g</i> factor of medium-Z lithium-like ions | D. Glazov SPSU | 10'+5' |
| 10h35 | Relativistic calculations of X-Ray transition energies and isotope shifts in heavy atoms and ions | N. Zubova SPSU | 10'+5' |
| 10h50 | Coffee Break | | |
| Astrophysical, Biomolecular and Surface Applications Chairperson: | | | |
| 11h20 | PAH molecules and e-emission enhancement in collisions with halouracil | L. Tribedi TIFR | 15'+5' |
| 11h40 | Radiation effects in astrophysical ices and biomolecules | A. N. Agnihotri CIMAP | 15'+5' |
| 12h00 | Irradiation of isolated collagen mimetic peptides and triple-helix models by different ionizing projectiles: keV ions, MeV ions, VUV and X-ray photons | M. Lalande CIMAP | 15'+5' |
| 12h20 | Studying the fragmentation dynamics and possible geometry of CO molecular clusters | V. Kumar CIMAP | 15'+5' |
| 12h40 | Investigation of the structural and chemical order in nanomaterial through transmission electron microscopy | J.-G. Mattéi CIMAP | 15'+5' |
| 13h00 | Lunch | | |
| 14h30 | Excursion to Château Du Breuil | | |
| 18h30 | Free Time | | |
| 19h15 | Group Picture at Cafe Mancel | | |
| 19h30 | Conference Dinner at Cafe Mancel | | |

Thursday, September 14th

| Time | | | Duration |
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| SPARC Instrumentation Chairperson: | | | |
| 9h30 | Commissioning of a High-Power Electron Gun for Electron-Ion Crossed-Beams Experiments | C. Brandau Univ. of Giessen | 15'+5' |
| 9h50 | Magnetic microcalorimeters: status | A. Fleischmann GSI, Darmstadt | 15'+5' |
| 10h10 | Detector development | U. Spiellmann GSI, Darmstadt | 15'+5' |
| 10h30 | Coffee Break | | |
| International Landscape: Atomic Physics Activities Related to SPARC Chairperson: | | | |
| 11h00 | Plasma physics at FAIR | V. Bagnoud GSI, Darmstadt | 15'+5' |
| 11h20 | Kinetic Energy Release measurements at the electrostatic Frankfurt Low Energy Storage Ring | J. Muller Institut für Kernphysik | 15'+5' |
| 11h40 | Electron shake-off induced by nuclear beta decay of trapped radioactive ions | X. Fléchar LPC | 15'+5' |
| 12h00 | Emission of anions from molecular species following cation impact | Z. Juhász MTA Atomki | 15'+5' |
| 12h20 | Closing speech | R. Schuch or T. Stöhlker Univ. Stockholm | 30' |
| 13h00 | Lunch | | |
| 14h00 | Visit of GANIL/SPIRAL2 Facilities | | |
| 17h00 | End of the Workshop | | |