

PROGRAMME



SUNDAY | AUGUST 31, 2014

arrivals

18:30–21:00 Welcome Party (Continental Hotel)

MONDAY | SEPTEMBER 1, 2014

08:00 Breakfast

09:00 Opening Talks

SESSION 1 | NUMERICAL METHODS I chaired by Eric Munro and Bohumila Lencová

- 09:10 F. H. Read
1 Achieving the highest accuracy with the BEM (invited)
- 09:40 J. Zlámál, B. Lencová
2 Influence of saturation of magnetic lens material on fields of deflectors and parasitic fields
- 10:00 M. Oral, V. Neděla
3 Dynamic correction of higher order deflection aberrations in the environmental SEM
- 10:20 R. Andrzejewski, D. Dowsett
4 Optimization of mass spectrometer design by spatial manipulation of SIMION field arrays
- 10:40 Coffee Break

SESSION 2 | MASS SPECTROMETERS I chaired by Hermann Wollnik and Erich Plies

- 11:00 H. Wollnik
5 High-resolving mass analyzers (invited)
- 11:20 Y. H. Zhang, H. S. Xu, Yu. A. Litvinov and CSR collaboration
6 Precision mass measurements of short-lived nuclides at storage ring in Lanzhou (invited)
- 11:50 H. Geissel, J. S. Winfield, G. P. A. Berg, T. Dickel, B. Franczak, E. Haettner, N. Iwasa, G. Münzenberg, W. R. Plass, C. Scheidenberger, H. Weick, M. Winkler, M. Yavor
7 The challenge of high-resolution spectrometer experiments with exotic nuclei at GSI-FAIR
- 13:00 Lunch

9TH INTERNATIONAL CONFERENCE ON CHARGED PARTICLE OPTICS

AUG 31–SEP 5, 2014
Hotel Continental | Brno
Czech Republic

SESSION 3 | ENERGY SPECTROMETERS chaired by Anjam Khursheed

- 14:00 A. Khursheed
8 The scanning electron microscope and electron energy spectrometer attachments (invited)
- 14:30 I. F. Spivak-Lavrov, L. M. Nazarenko, E. M. Yakushev
9 Meshless energy analyzer of the cylindrical mirror type
- 14:50 A. Srinivasan, A. Khursheed
10 Experimental results from a radial mirror analyzer (RMA) attachment for scanning electron microscopes (SEM)
- 15:10 K. H. Cheong, W. Han, A. Khursheed, K. Nelliyan
11 A parallel radial mirror energy analyser attachment for the scanning electron microscope
- 15:30 Coffee Break

SESSION 4 | ACCELERATOR OPTICS I chaired by Martin Berz and Andreas Lehrach

- 16:00 M. Berz
12 Optics and nonlinear effects in repetitive systems (invited)
- 16:30 R. Hipple, M. Berz
13 High-order modeling of fringe field effects in storage rings
- 16:50 J. Kunz, P. Snopok, M. Berz, K. Makino
14 Matter-dominated muon accelerator lattice simulation tools for COSY Infinity
- 17:10 B. Loseth, M. Berz, H. Zhang, P. Snopok, J. Kunz
15 Optics of ionization cooling channels under the influence of space charge
- 18:30 Dinner

TUESDAY | SEPTEMBER 2, 2014

08:00 Breakfast

SESSION 5 | SURFACE PHYSICS INSTRUMENTATION

chaired by Gerd Schönhense and Ilona Müllerová

09:00 G. Schönhense
Fast k-space mapping of electronic bands using time-of-flight based cathode-lens microspectroscopy (invited)

09:30 Ch. Tusche
Frontiers of momentum microscopy: High resolution and spin-polarized measurements of the electronic structure of solids with strong correlations and spin-orbit coupling (invited)

10:00 K. Matsuda, Š. Mikmeková, S. Ikeno
TEM and SLEEM observation for equilibrium phase in Al-Mg-Si alloys added by Cu, Ag or Au

10:20 V. Katsap
Finding LaB₆ cathode workfunction

10:40 Coffee Break

SESSION 6 | ION OPTICS I

chaired by Pieter Kruit and Martin Winkler

11:00 M. Yavor, T. Dickel, W. R. Plass, J. Lang, H. Geissel, W. Lippert, C. Scheidenberger
Novel ion-optical modes of ion isolation and measurements in multiple-reflection time-of-flight analyzers (invited)

11:30 A. S. Berdnikov
Pseudo potential and pseudo Hamiltonian description of the motion of charged particles in RF fields

11:50 H. Wollnik, F. Arai, Y. Ito, M. Wada, P. Schury
RF-carpet that compress wide ion clouds to narrow ion beams

12:10 V. Shchepunov, A. Piechaczek, H.K. Carter, H. Wollnik
Ion optics of a high-resolution multi-reflection time-of-flight mass spectrometer and separator ORISS

13:00 Lunch

SESSION 7 | NUMERICAL METHODS II

chaired by Eric Munro and Bohumila Lencová

14:00 Y. Ose, H. Sato, H. Morishita
Simulation for the development of electron gun and detection system of the latest FE-SEM (invited)

14:30 J. Kološová, T. Hrnčíř, J. Jiruše, M. Rudolf, J. Zlámal
On the calculation of SEM and FIB beam profiles

14:50 T. Radlička
Wave optical calculation of probe size in low energy scanning electron microscope

15:10 D. Dowsett
Advanced SIMION techniques: boundary matching and genetic optimization

15:30 Coffee Break

16:00 SESSION 8 | POSTER SESSION (authors are present at their posters)

18:30 Dinner

WEDNESDAY | SEPTEMBER 3, 2014

08:00 Breakfast

SESSION 9 | ELECTRON OPTICS I

chaired by Peter Hawkes and Tomáš Radlička

09:00 S. Thomas, J. Hammer, P. Weber, P. Hommelhoff
Can a quantum electron microscope achieve low-damage (biological) imaging? (invited)

09:30 P. Kruit
Electron optics for 10^N parallel beams (N=2,4,6) (invited)

10:00 R. M. Tromp
Towards 1.5λ resolution with low energy electrons (invited)

10:30 Coffee Break

SESSION 10 | MASS SPECTROMETERS II

chaired by Hermann Wollnik and Erich Plies

11:00 A. S. Berdnikov, K.V. Solovyev
Golikov theorem of ideal time-of-flight mass analyzers

11:20 Z. Russell, E. X. Chen, J. J. Amsden, R. M. Danell, S. D. Wolter, Ch. B. Parker, M. E. Ghem, B. R. Stoner, J. T. Glass, D. J. Brady
Greater than 10× throughput enhancement in magnetic sector mass spectrometry via aperture coding

11:40 H. Q. Hoang, D. Dowsett, T. Wirtz
A high performance compact magnetic sector mass spectrometer

12:00 M. S. Verruno, D. Dowsett, T. Wirtz, S. Della Negra
Development of a compact high performance mass spectrometer for combined TEM-SIMS nano-analytics

12:40 Lunch

13:30 Excursion with Dinner
-22:00

THURSDAY | SEPTEMBER 4, 2014

08:00 *Breakfast*

SESSION 11 | NUMERICAL METHODS III

chaired by Eric Munro and Bohumila Lencová

- 09:00 H. Zhang, Z. Tao, J. Portman, P. Duxbury,
35 C. Y. Ruan, M. Berz
The DA based MLFMA for 3D space charge field calculation and photoemission simulation
- 09:20 E. Munro, J. Rouse, X. Zhu, V. Katsap
36 **E-beam interaction with multi-layered targets**
- 09:40 S. Krátký, M. Urbánek, V. Kolařík
37 **PEC reliability in 3D e-beam DOE nanopatterning**
- 10:00 V. Y. Ivanov
38 **Analytical technique in the boundary element method for 3-D self-consistent problems of electron optics**

10:20 *Coffee Break*

SESSION 12 | ACCELERATOR OPTICS II

chaired by Martin Berz and Andreas Lehrach

- 11:00 A. Lehrach
39 **Beam and spin dynamics for hadron storage rings (invited)**
- 11:30 M. Rosenthal (on behalf of the JEDI collaboration)
40 **Investigation of beam and spin dynamics for EDM measurements at COSY**
- 12:00 K. Makino, M. Berz, E. Valetov
41 **Dynamics in electrostatic rings via high-order transfer maps**

13:00 *Lunch*

SESSION 13 | ION OPTICS II

chaired by Pieter Kruit and Martin Winkler

- 14:00 G. Schwind
42 **High brightness ion sources for focused ion beam systems (invited)**
- 14:30 Y. Greenzweig, Z. Malamud, A. Raveh
43 **Avoiding bias of focused ion beam edge resolution measurements at high doses**
- 14:50 D. Dowsett, T. Wirtz, Y. Fleming
44 **SIMS based correlative microscopy: The ultimate combination of sensitivity and lateral resolution.**
- 15:10 O. De Castro, D. Dowsett, T. Wirtz, S. Della Negra
45 **First design steps of a high-brightness electro impact ion source for nano-applications**

15:30 *Coffee Break*

SESSION 14 | ELECTRON OPTICS II

chaired by Peter Hawkes and Tomáš Radlička

- 16:00 A. Khursheed, W. K. Ang
46 **Ring-cathode focused electron/ion beam column designs**
- 16:20 A. M. Blackburn
47 **Optimum support width of annular apertures in the presence of edge charging**
- 16:40 M. Mankos, K. Shadman, A. T. N'Diaye, A. K. Schmid,
48 H. H. J. Persson, R. W. Davis
Electron optics for a monochromatic, aberration-corrected, dual-beam low energy electron microscope
- 17:00 T. Sasaki, M. Sato, K. Hidaka, J. Onuki
49 **Beam characterization for scanning electron microscopes by the RPS and IPC methods**
- 17:20 W. Y. Chang, F. R. Chen
50 **A novel design used for DLVSEM**

18:30 *Dinner*

8:00 Breakfast

SESSION 15 | ABERRATION STUDIES

chaired by Harald Rose and Ondrej Krivanek

- 9:00 H. Müller, S. Uhlemann, P. Hartel, M. Linck,
1 J. Zach, M. Haider
Development of modern TEM aberration correctors (invited)
- 9:30 N. Dellby, G. J. Corbin, Z. Dellby, T. C. Lovejoy,
2 Z. S. Szilagyi, O. L. Krivanek
Creating full control of all fourth and fifth order aberrations in C3/C5 aberration correctors (invited)
- 10:00 R. Janzen
3 **Monochromatizing without filtering using dynamic fields without bunching: A new concept for d-TEM illumination**
- 10:20 R. Jagasia, M. Berz, B. Loeth
4 **Poincaré section method for beam element maps**

10:40 Coffee Break

SESSION 16 | ELECTRON OPTICS III

chaired by Peter Hawkes and Tomáš Radlička

- 11:00 M. Mankos, K. Shadman, B. J. Siwick
55 **Electron mirror pulse compression for ultrafast electron diffraction and dynamic electron microscopy**
- 11:20 J. Hammer, S. Thomas, P. Weber, P. Hommelhoff
56 **A microwave-chip based beam splitter for low-energy electrons**
- 11:40 I. S. Hwang, C. Y. Lin, W. T. Chang, W. H. Hsu
57 **Low-energy electron diffractive imaging based on a single-atom electron source**
- 12:00 K. Chang, Z. Tao, H. Zhang, J. Portman, D. Nan,
58 K. Makino, M. Berz, P. M. Duxbury, M. Crimp, C. Y. Ruan
Development of high-brightness ultrafast electron diffraction and microscopy for functional imaging of nanomaterials
- 12:20 X. J. Wang
59 **MeV ultrafast electron diffraction and imaging**

13:00 Closing Talks

13:30 Lunch

Departures

POSTERS

Posters displayed from MONDAY | SEPT 1, 11:00 to FRIDAY | SEPT5, 11:00

Authors present at posters:

TUESDAY | SEPTEMBER 2, 16:00–17:30

EO1 60	A. T. Ibrayev, A. A. Ibrayev, M. S. Nurmanov, A. K. Shaikhin Electron-optical characteristics of 4-electrode and 6-electrode doubly-symmetrical immersion lens
EO2 61	V. Katsap, C. Lai Emission imaging of a LaB₆ emitter
EO3 62	A. Knápek, T. Radlička, S. Krátký Design and simulation of a carbon nanotube electron source
EO4 63	C. Y. Lin, W. T. Chang, W. H. Hsu, W. C. Lai, Y. S. Chen, I. S. Hwang Low-keV electron column based on a single-atom electron source
EO5 64	F. Mika, I. Konvalina, Ch. Walker Imaging with STEM detector, experiments vs. simulation
EO6 65	T. Řiháček, M. Lenc, I. Müllerová Measurement of coherence properties of scanning electron microscope
EO7 66	O. Sise Imaging properties and aberration analysis of electrostatic afocal-zoom lenses using computer optimization
AS1 67	S. B. Bimurzaev, E. M. Yakushev A simple corrector of electron lens aberrations with an electron mirror
AS2 68	A. Khursheed, W. K. Ang An on-axis electrode aperture unit for spherical aberration correction
AS3 69	T. Ogawa, B. Cho, S. J. Ahn A novel monochromator of double cylindrical lenses
IO1 70	K. Marianowski, E. Plies Experimental results using a low-energy FIB column with minimised Coulomb interaction
IO2 71	O. Sise, P. Y. Nabhiraj, R. Menon Analysis of optical column for plasma ion source based focused ion beam system
IO3 72	D. Grinfeld, Ch. Hock On equilibrium of ions confined in a periodic RF field in presence of a buffer gas with intermediate pressure
IO4 73	S. B. Bimurzaev, N. U. Aldiyarov, M. M. Magzom High dispersive electrostatic mirrors with spatial and time-of-flight focusing of the second order
IO5 74	M. V. Dubkov, V. V. Ivanov Separation of the parent ions by using mapping features of quadrupole lens
AO1 75	J. Y. Kim, S. G. Hong, J. W. Kim, W. Wan Beam optical study of in-flight fragment separator using a high power primary beam in the energy of a few hundred MeV/u
AO2 76	M. O. A. El Ghazaly, A. S. Jabr, P. Defrance Design of a low-energy electrostatic storage ring, under consideration of 3D fields
MS1 77	D. Grinfeld, M. Monastyrsky, M. Skoblin, I. Kopaev, A. Makarov Aberration and space-charge effects control in the Orbitrap mass analyzer
MS2 78	I. F. Spivak-Lavrov, O. A. Baissanov, L. M. Nazarenko, E. M. Yakushev Simple direct-flow TOF MS on the basis of the wedge-shaped mirror with two-dimensional field

IS3 9	I. F. Spivak-Lavrov, O. A. Baissanov New circuits of multipass TOF MS on the basis of a wedge-shaped electrostatic mirror with two-dimensional field
S1 0	I. A. Averin Parallel acquisition electrostatic and magnetostatic energy spectrographs based on Euler' homogeneous potentials
S2 1	G. Lebedev, A. S. Tremsin, Z. Hussain High energy and spatial resolution time-of-flight photoemission spectroscopy microscope (TOF-PESM)
S3 2	K. H. Cheong, A. Khursheed Computational optimization of multi-channel electron energy spectrometer design
S4 3	V. S. Gurov, P. I. Kuksa, A. A. Trubitsyn Focusing properties of hyperbolic fields
S5 4	J. S. Winfield, H. Geissel, T. Aumann, G. P. A. Berg, B. Franczak, G. Münzenberg, C. Scheidenberger, H. Simon, T. Uesaka, H. Weick, M. Winkler, M. Yavor, R. G. T. Zegers Dispersion-matched modes of the in-flight separator super-frs and its combined spectrometers
PI1 5	T. Nakashima, H. Murata, H. Suhara, H. Shimoyama Method of estimating charge density distribution on dielectric surface
PI2 6	A. Srinivasan, A. Khursheed Material characterization by energy filtered secondary electron signals inside the scanning electron microscope (SEM)
PI3 7	M. V. Dubkov, P. I. Kuksa, D. Yu. Tarabrin, A. A. Trubitsyn AES-SIMS combine
PI4 8	L. Frank, I. Müllerová Optimizing the recognition of surface crystallography
M1 9	M. Horák, J. Zlámal Accurate interpolation of 3D fields close to the optical axis
M2 0	R. Giles, A. Kalimov, D. Lysenko Application of singular finite elements for improving accuracy of the BEM solutions
M3 1	J. Zelinka, M. Oral, T. Radlička Simulation of space charge effects in electron optical systems based on the calculation of current density
M4 2	H. Murata, M. Ishigami, H. Shimoyama Development of boundary magnetic charge method for computing fields in saturated magnetic materials
M5 3	W. K. Ang, A. Khursheed Direct ray tracing of scanning electron microscope optics from cathode-tip to specimen
M6 4	O. D. Potapkin Analytical method for electron gun calculation
M7 5	O. D. Potapkin, A. A. Melnikov Collection efficiency and mark detection
M8 6	A. A. Trubitsyn, V. S. Gurov Monte Carlo technique of simulation of electron motion in gas
M9 7	V. Neděla, I. Konvalina, M. Oral Simulation of energy distribution of signal electrons detected by the segmental ionization detector in high pressure conditions of ESEM
M10 8	A. T. Ibrayev Theory of cathode lens with multipole components of electrostatic field and the space charge
S6 9	T. J. M. Zouros, A. Kanellakopoulos, I. Madesis, A. Dimitriou, M. Fernández-Martín, G. Martinez, T. J. Mertzimekis The optimization of a 4-element input lens on a hemispherical deflector analyzer using simion