

**Science at FELs 2022 - 19-21 September 2022 - Draft programme**
**Monday, 19 September 2022**

|                           |       |       |  |                              |
|---------------------------|-------|-------|--|------------------------------|
| Tutorials                 | 09:00 | 10:00 | M. Altarelli (MPSD): Overview and scientific perspectives of worldwide FEL facilities  | DESY Auditorium              |
| Chair: Elke Plönjes       | 10:00 | 11:00 | L. Young (University of Chicago): Stimulated X-ray Raman Spectroscopy with SASE pulses   | DESY Auditorium              |
|                           | 11:00 | 11:30 | <i>Coffee break</i>  | Auditorium Foyer and outside |
|                           | 11:30 | 12:30 | C. David (PSI): Diffractive X-ray optics for XFELs: opportunities and challenges   |                              |
|                           | 12:30 | 13:45 | <i>Lunch break</i>   | FLASH Seminar room           |
| Welcome                   | 13:45 | 14:00 | Robert Feidenhans'l (European XFEL), Markus Gühr (DESY)  | DESY Auditorium              |
| Session 1 AMO             | 14:00 | 14:30 | D. Scuderi (CNRS): Tunable Free Electron Laser and IRMPD Spectroscopy: A perfect synergy to unravel the structure and reactivity of biomolecules in the gas phase  | DESY Auditorium              |
| Chair: Markus Gühr        | 14:30 | 15:00 | A. Marinelli (SLAC): Observation of charge migration with attosecond X-ray free-electron lasers  | DESY Auditorium              |
|                           | 15:00 | 15:20 | J. Bozek (SOLEIL): Unexpected resonances in the double core-hole photoionization of atoms and molecules  | DESY Auditorium              |
|                           | 15:20 | 15:40 | R. Boll (EuXFEL): X-ray induced Coulomb explosion imaging of complex molecules   | DESY Auditorium              |
|                           | 15:40 | 16:00 | <i>Coffee Break</i>  | Auditorium Foyer and outside |
| Session 2 Chemistry       | 16:00 | 16:30 | R. Ingle (University College London): Molecular Spectroscopy with Soft X-rays  | DESY Auditorium              |
| Chair: Christian Bressler | 16:30 | 17:00 | F. de Groot (Utrecht University): Time-resolved soft x-ray absorption and resonant inelastic x-rayscattering of transition metal oxides  | DESY Auditorium              |
|                           | 17:00 | 17:20 | M. Scholz (DESY): The complete interface molecular movie: One-stop imaging of electronic and structural dynamics   | DESY Auditorium              |
|                           | 17:20 | 17:40 | D. Bregenholt Jacobsen (EuXFEL): Resolving the ultrafast solute and solvent dynamics in the highly solvent sensitive [Fe(CN) <sub>4</sub> (bpy)] <sup>2-</sup> complex by simultaneous X-ray Solution Scattering and X-ray Emission Spectroscopy | DESY Auditorium              |
|                           | 18:00 |       | <i>Barbecue at DESY</i>  | DESY Canteen                 |

**Tuesday, 20 September 2022**

|                     |       |       |   |                              |
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| Session 3 Materials | 09:00 | 09:30 | B. Pfau (MBI): Ultrafast creation of a topological magnetic phase   | DESY Auditorium              |
|                     | 09:30 | 10:00 | U. Staub (PSI): Coherent Driving of Spins and Atoms with THz Fields   | DESY Auditorium              |
|                     | 10:00 | 10:20 | W. Bronsch (Elettra): Ultrafast dynamics in (TaSe <sub>4</sub> ) <sub>2</sub> I triggered by valence and core-level excitation                              | DESY Auditorium              |
|                     | 10:20 | 10:40 | M. Sacchi (SOLEIL): Resonant magnetic scattering of FEL beams carrying orbital angular momentum   | DESY Auditorium              |
|                     | 10:40 | 11:10 | <i>Coffee break</i>   | Auditorium Foyer and outside |
| Session 4 Biology   | 11:10 | 11:40 | K. Ayer (MPSD): Serial femtosecond imaging to visualize ultrafast dynamics in nanoscale systems   | DESY Auditorium              |
| Chair: Gregor Knopp | 11:40 | 12:10 | G. Brändén (University of Gothenburg): XFEL- and synchrotron-based serial crystallography studies of the membrane-bound proton pump cytochrome c oxidase    | DESY Auditorium              |
|                     | 12:10 | 12:30 | J. van Thor (Imperial College London): Coherent control of protein structural dynamics with X-ray crystallographic observation                              | DESY Auditorium              |
|                     | 12:30 | 12:50 | R. G. Castillo (LSU, EPFL): Investigation on electronic structure and reactivity in heterometallic proteins using femtosecond X-ray absorption spectroscopy | DESY Auditorium              |
|                     | 13:15 | 15:30 | <i>Lunch break</i>  | FLASH Seminar room           |
|                     | 15:30 |       | <i>Shuttle transfer to European XFEL</i>  |                              |
|                     | 16:30 | 18:30 | Poster session & Site visit   | EuXFEL                       |
|                     | 18:30 | 20:30 | <i>Reception</i>  | EuXFEL                       |
|                     | 20:00 | 21:00 | <i>Shuttle transfer to DESY</i>   |                              |

**Wednesday, 21 September 2022**

|                               |       |       |   |                              |
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| Session 5 High-energy density | 10:00 | 10:30 | M. Harmand (UPMC): Tracking electronic phase transitions of iron oxides at planetary interiors conditions                 | DESY Auditorium              |
| Chair: Sven Toleikis          | 10:30 | 11:00 | T. Cowan (HZDR): Exploring relativistic plasmas and strong field phenomena with HED-HIBEF at EuXFEL                       | DESY Auditorium              |
|                               | 11:00 | 11:20 | <i>Coffee break</i>   | Auditorium Foyer and outside |
|                               | 11:20 | 11:40 | R. Jin (CFEL, DESY): Plasma environmental effects in the atomic structure for simulating XFEL-heated solid-density matter | DESY Auditorium              |
|                               | 11:40 | 12:00 | E. Principi (Elettra): Recent advances in exploring matter under extreme conditions at the FERMI FEL                      | DESY Auditorium              |
|                               | 12:00 | 13:30 | <i>Lunch Break</i>  | FLASH Seminar room           |
| Session 6 New Methods         | 13:30 | 14:00 | C. Svetina (PSI): X-ray transient grating at X-ray Free Electron Lasers: Status and perspectives                          | DESY Auditorium              |
| Chair: Martin Beye            | 14:00 | 14:30 | J. Yamada (Spring8): Sub-10 nm XFEL focusing mirror system at SACLA for 10 <sup>22</sup> W/cm <sup>2</sup> intensity      | DESY Auditorium              |
|                               | 14:30 | 14:50 | M. Doyle (Lawrence Berkeley Lab): Seeded Two-Color Stimulated XES on Mn Solutions   | DESY Auditorium              |
|                               | 14:50 | 15:10 | G. Goetzke (DESY): AI Methods for an improved evaluation of FEL diagnostic data   | DESY Auditorium              |
|                               | 15:10 | 15:30 | <i>Break</i>  | Auditorium Foyer and outside |
| 10 years FELs of Europe       | 15:30 | 15:40 | S. Molodtsov (EuXFEL): Celebration speech   | DESY Auditorium              |
| Chair: Serguei Molodtsov      | 15:40 | 16:05 | J. Feldhaus: Historical talk  | DESY Auditorium              |
|                               | 16:05 | 16:30 | E. Plönjes (DESY): Towards the future   | DESY Auditorium              |
|                               | 16:30 | 16:45 | Prize ceremony  | DESY Auditorium              |
|                               | 16:45 | 17:20 | Prize talk  | DESY Auditorium              |
|                               | 17:20 |       | Closing remarks   |                              |
|                               | 18:30 |       | <i>Dinner</i>   | DESY Canteen                 |