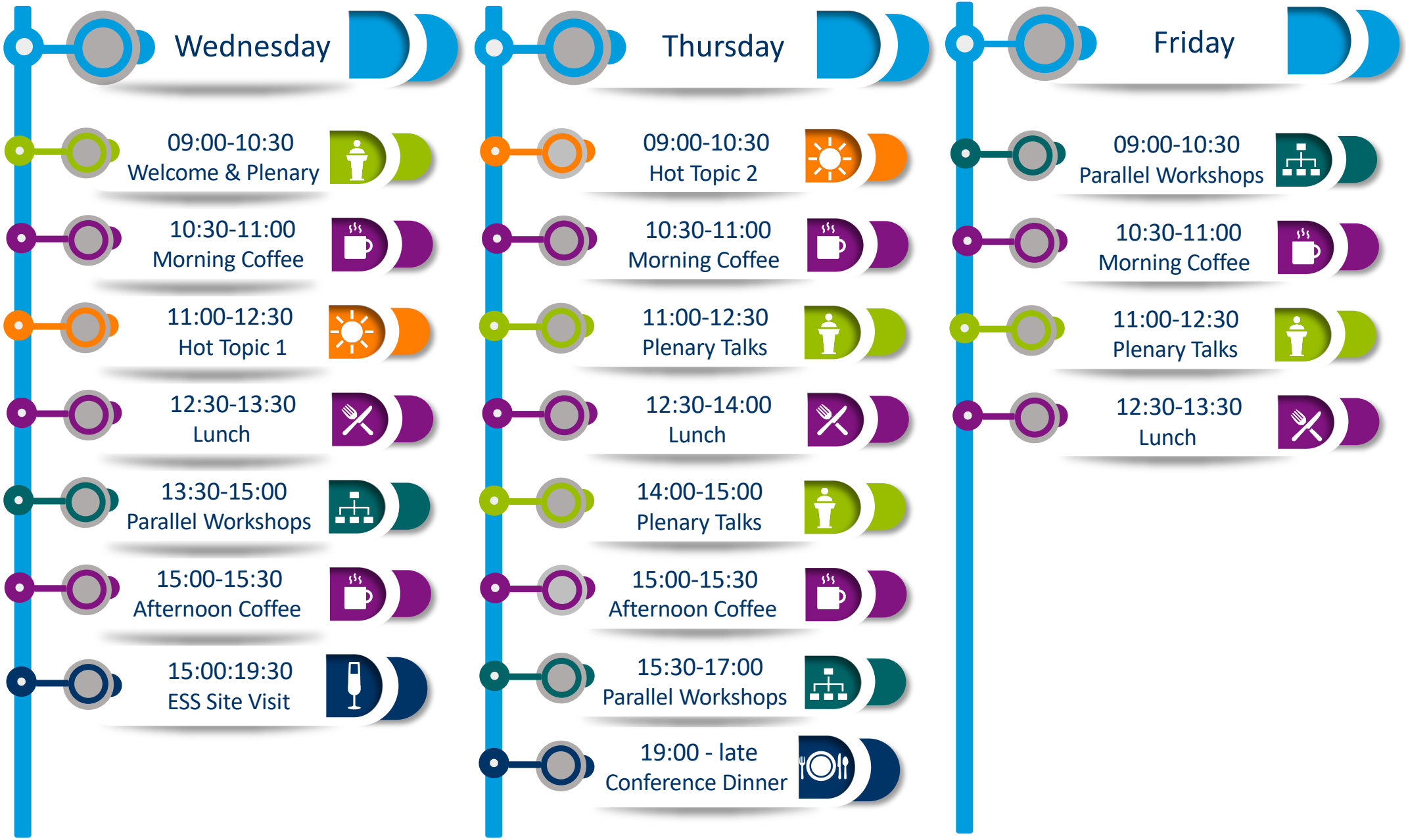
Joint ESS ILL User Meeting

5-7 October 2022
Lund, Sweden

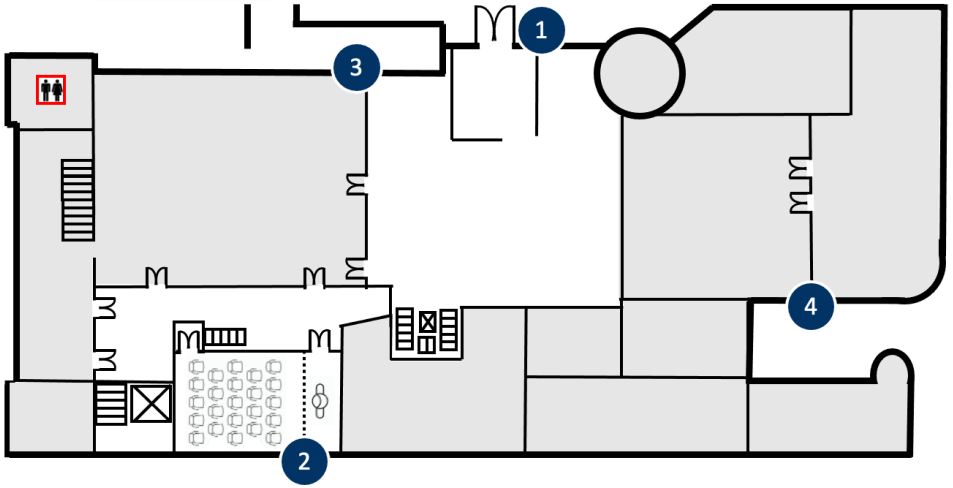
Programme Book

Programme Overview



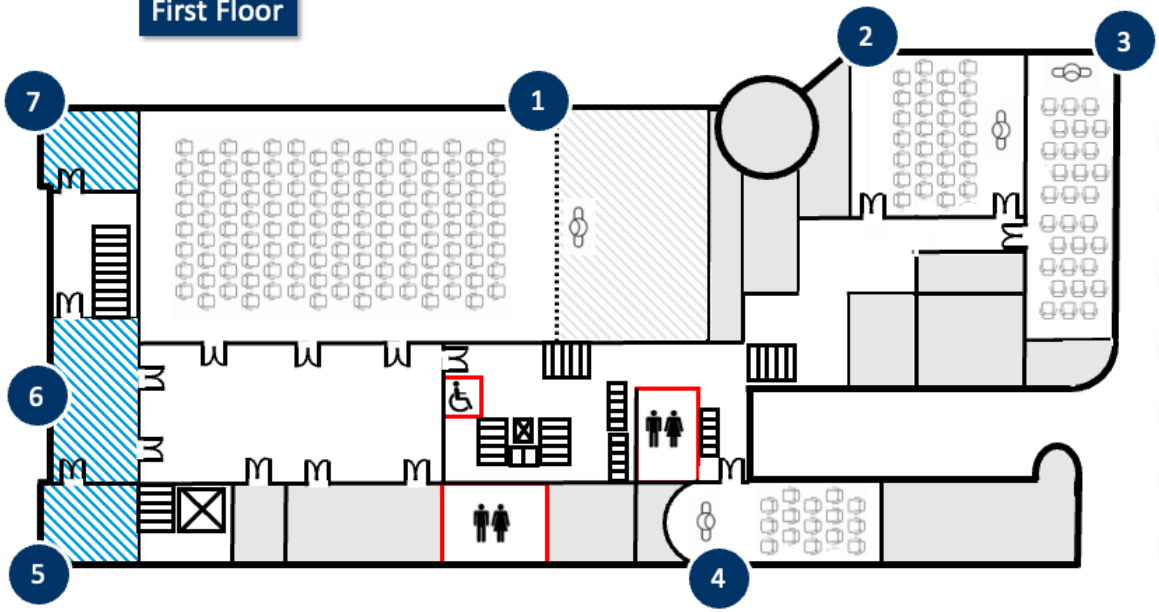
AF Borgen Room Guide

Ground Floor



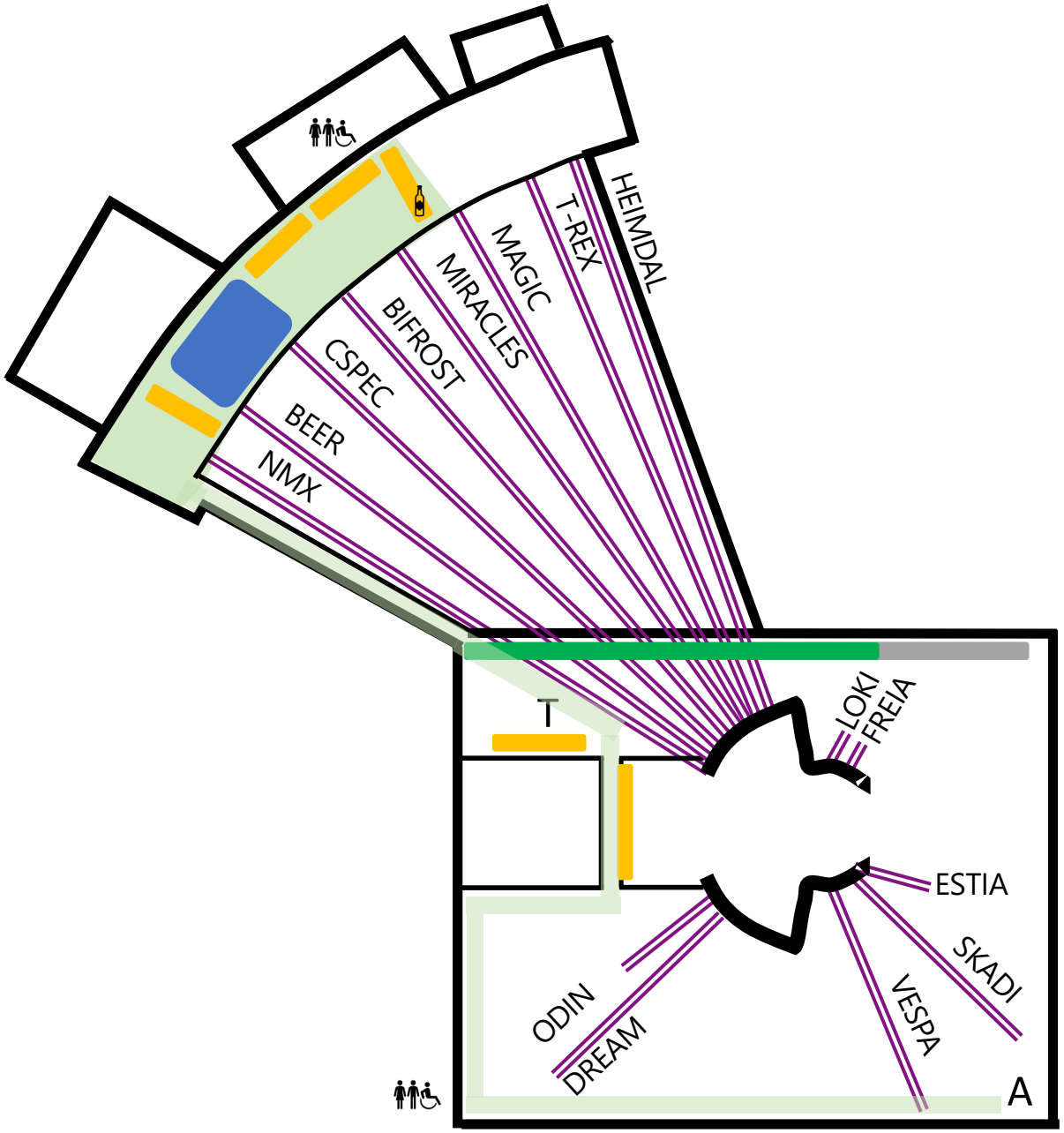
1. Main Entrance
2. Gustafscenen
3. Athen
4. Tegnérs Matsalar

First Floor



1. Stora Salen
2. Nya Fest
3. Lilla Salen
4. Sångsalen
5. Zetterwallska Rummet
6. Övre Athen
7. Munckska Rummet

ESS Site Plan



Contributed posters
Facility posters
Level 1, steel walkway (open)
Level 1, steel walkway (closed)
Free walking area

A Assembly point for accelerator tours
T Assembly point for target tours
Toilets
Water Station

Programme Overview

Wednesday 5 October

09:00	Opening remarks	Helmut Schober	*Stora Salen*	*Chair: H. Schober*
09:10	ESS facility update	Andreas Schreyer	*Stora Salen*	
09:30	ILL facility update	Jacques Jestin	*Stora Salen*	
09:50	Practical Information	Andreas Schreyer	*Stora Salen*	
10:00	Autonomous neutron experiments	Martin Boehm	*Stora Salen*	
10:30	Coffee			
11:00	**Neutrons and Current Health Challenges**	Marianna Yanez Arteta Lukas Gajdos Andrey Kovalevsky Garry Laverty	*Stora Salen*	*Chair: Z. Fisher, M. Blakeley*
12:30	Lunch			

	Fundamental and Particle Physics *Stora Salen*	**Diffraction and Applied Materials** *Gustafscenen*	**Imaging and Energy Materials** *Sångsalen*	**Large Scale Structures and the Life Sciences** *Lilla Salen*	**Spectroscopy and Magnetism** *Nya Fest*
13:30	Marcus Scheck Anastasio Fratangelo Kazimierez Bodek	Peter Hedström Zifan Wang Wen Cui Stavros Samothrakitis	Ralf Ziesche Erik Lübke Estrid Naver Alex Backs Domenico Battaglia	Petri Kursula Sophie Ayscough Ben Humphreys Naved Malek Joao Ramos	Tobias Weber Romain Sibille Abhijit Kademane Astrid Schneidewind Siobhan Tobin

15:00	**Coffee available - busses to site visit and poster session**
19:00	**Busses return from site visit**

Programme Overview

Thursday 6 October

09:00	**Neutrons and Current Climate Challenges**	Wiebke Lohstroh Konstantinos Stefanopoulos Luis Barbosa Philip Yang	*Stora Salen*	*Chair: M. Feygenson* *P. Fouquet*
10:30	Coffee			
11:00	The magnetic flux line – a tool for exploring unconventional superconductors	Elizabeth Blackburn	*Stora Salen*	*Chair: A. Hiess*
11:30	Gas hydrates: from their natural environment to energy innovation	Arnaud Desmedt	*Stora Salen*	
12:00	Development of an Ultra Cold and Very Cold Neutron Source at the ESS	Valentina Santoro	*Stora Salen*	
12:30	Lunch			
14:00	Molecular insights into protein - membrane interactions: endocytosis, fusion and neutrons	Nathan Zaccai	*Stora Salen*	*Chair: J. Jestin*
14:30	Connecting protein structure and dynamics: the neutron perspective	Frank Schreiber	*Stora Salen*	
15:00	Coffee			

15:30	**Industrial Applications of Neutrons** *Stora Salen*	**Diffraction and Magnetism** *Gustafscenen*	**Imaging and Engineering Materials** *Sångsalen*	**Large Scale Structures and Soft Matter** *Lilla Salen*	**Spectroscopy and Functional Materials** *Nya Fest*
	Peter Dowding Hanna Leemreize Ilaria Mosca	Oksana Zaharko Ellen Fogh Werner Schweika Jennifer Graham Jian Rui Soh	Josefin Martell Fernando Vieira Lima E Tobias Wrammerfors Robert Cubitt Alessnadr Tengattini	Andrea Scotti Annekatrin Sill Paavo Pentitilä Wenke Mueller Karin Edler	Fabrizia Foglia Bettina Schwaighofer Mohamed Aouane Peter Fouquet Rasmus Lavén

Programme Overview

Friday 7 October

	Imaging for Archeology and Material Science *Stora Salen* Stephen Hall Hanna Isaksson Camilla Larsen & Stavros Samothrakitits	**Diffraction for Energy and Sustainability** *Gustafscenen* Anatoliy Senyshyn Neelima Paul Ida Nielsen François Goutenoire	**Fundamental and Particle Physics** *Sångsalen* Francesc Morabal Capilla Karina Bernert Michael Jentschel Richard Wagner Hanno Filter	**Large Scale Structures and Hard Matter** *Lilla Salen* Grace Causer Emma Campillo Xaver Brems Sebastian Stock Ahmed Alshemi	**Spectroscopy and Soft Matter** *Nya Fest* Stephane Longville Maria Rescigno Michaela Zamponi Maria Paula Marques Peter Falus
09:00					
10:30	Coffee				
11:00	Advancing electrochemical reactor science with neutron radiography		Antoni Forner-Cuenca	*Stora Salen*	*Chair: A. Schreyer*
11:30	ENSA Update		Henrik Rønnow	*Stora Salen*	
12:00	Q&A Panel		TBA	*Stora Salen*	
12:30	Closing Remarks		Paul Langan	*Stora Salen*	

Parallel Session Detailed Programme

Wednesday 5 October

Neutrons and Current Health Challenges

11:00 Marianna Yanez Arteta
Structural investigation of lipid nanoparticles is key for successful mRNA delivery

11:30 Lukas Gajdos
Neutrons for structural glycobiology: lectin-carbohydrate recognition in host-pathogen interactions

12:00 Andrey Kovalevsky
Neutron crystallography to uncover SARS-CoV-2 main protease function and design potent inhibitors

12:15 Garry Laverty
Understanding the microscopic properties and drug diffusion kinetics in long-acting peptide hydrogel drug delivery implants for HIV/AIDs

Fundamental and Particle Physics (Chair: C. Michelagnoli)

13:30 Marcus Scheck
Nuclear Physics Research at ILL – an overview

14:00 (WITHDRAWN) Stephan Sponar
(WITHDRAWN) Weak and which-way measurements in neutron interferometry

14:30 Anastasio Fratangelo
BeamEDM - A beam experiment to search for the neutron electric dipole moment

14:45 Kazimierez Bodek
BRAND – search for exotic couplings in weak interactions using the transverse electron polarization in the decay of free neutrons

Diffraction and Applied Materials (Chair: P. Beran, Th. Hansen)

13:30 Peter Hedström
In-situ neutron diffraction studies of phase separation in mixed carbides

14:00 Zifan Wang
In situ neutron diffraction investigation of grain boundary effect on degradation of Superelasticity in near equiatomic NiTi alloy

14:15 Wen Cui
Standardization of industrial residual stress measurement for metallic components: diffraction and destructive techniques

14:30 Stavros Samothrakitis
Considering instrumentation for a high intensity moderator at the European spallation source

Parallel Session Detailed Programme

Imaging and Energy Materials (Chair: Lukas Helfen, Søren Schmidt)

13:30 Ralf Ziesche
4D neutron imaging of lithium batteries and fuel cells

14:00 Erik Lübke
Investigation of silicon-based anodes for Li-ion batteries using X-ray and Neutron 3D/4D imaging techniques

14:15 Estrid Naver
Phase contrast neutron imaging of solid oxide electrochemical cells

14:30 Alex Backs
Magnetic bulk properties of ferromagnetic metal sheets

14:45 Domenico Battaglia
Operando multimodal study of degradation and sodium storage processes in sodium-ion batteries

Large Scale Structures and the Life Sciences (Chair: Giovanna Fragneto)

13:30 Petri Kursula
The myelin membrane visualised using photons, neutrons, and electrons

14:00 Sophie Ayscough
The role of hydrocarbons in cyanobacterial membranes

14:15 Ben Humphreys
Lipolysis of a Thin Triolein Film

14:30 Naved Malek
Multi responsive, self-healable and injectable ionic liquid based polymeric hydrogel for the treatment of breast cancer

14:45 Joao Ramos
A clear picture of the active site of hen egg-white lysozyme from atomic resolution neutron crystallography

Spectroscopy and Magnetism (Chair: P. Deen, U. Bengaard Hansen)

13:30 Tobias Weber
Topological magnon band structure of emergent Landau levels in a skyrmion lattice

14:00 Romain Sibille
High-resolution spectrum of fractional excitations in $Ce_2Sn_2O_7$

14:15 Abhijit Kademane
Singlet magnetism in $SrTm_2O_4$

14:30 Astrid Schneidewind
AI-assisted neutron spectroscopy – Log-Gaussian processes for TAS

14:45 Siobhan Tobin
Magnetic structure and spin waves of the doped cobalt oxide La2-xBaxCoO4

Parallel Session Detailed Programme

Thursday 6 October

Neutrons and Current Climate Challenges

09:00 Wiebke Lohstroh
Complex hydrides for energy applications

09:30 Konstantinos Stefanopoulos
Neutron scattering studies on CO2 confined in nanoporous mate-rials: Applications to CO2 sequestration and oil recovery

10:00 Luis Barbosa
In situ flow exchange experiments between macropore and soil matrix combining Neutron and X-ray tomographies

10:15 Philip Yang
Investigating the physical behaviour of novel cyclic poly(lactone)s using SANS

Industrial Applications of Neutrons (Chair: C. Boudou)

15:30 Peter Dowding
Using neutrons to unlock the properties of commercial oil additives

16:00 Hanna Leemreize
Making neutron characterization tools available to industry

16:15 Ilaria Mosca
Dynamic cluster formation, viscosity and diffusion in monoclonal antibody solutions

Diffraction and Magnetism (Chair, W. Schweika, P. Beran)

15:30 Oksana Zaharko
Exotic spin states in frustrated antiferromagnet $MnSc_2S_4$

16:00 Ellen Fogh
Randomness and frustration in a S = 1/2 square-lattice Heisenberg antiferromagnet

16:15 Werner Schweika
Chiral spin liquid ground state in $YBaCo_3FeO_7$

16:30 Jennifer Graham
Co-existing long- and short-range magnetic order in the frustrated diamond antiferromagnet, $LiYbO_2$

16:45 Jian Rui Soh
Detection of Magneto-electric Multipoles

Parallel Session Detailed Programme

Thursday 6 October

Imaging and Engineering Materials (Chair: Alessandro Tengattini, Manuel Morgano)

15:30 Josefin Martell
Insights into martian meteorites and other planetary materials from X-ray and neutron tomography

15:45 Fernando Viera Lima
Characterization of triaxial deformation and hydraulic behavior of sandstones through in-situ testing with x-ray and neutron tomography

16:00 Edvin Wrammerfors
Exploratory neutron tomography of human articular cartilage

16:15 Robert Cubitt
Quantitative measurement of boron-10 using ToF transmission

16:30 Ilija Vego
5D tomography of couscous particles exposed to high relative humidity

16:45 Open discussion

Large Scale Structures and Soft Matter (Chair: Trevor Forsyth)

15:30 Andrea Scotti
Small-angle scattering and neutron reflectometry investigation of ultra-soft colloids in two and three dimensions

16:00 Annekatrin Sill
In situ neutron reflectivity studies of vertical polyelectrolyte diffusion in layer-by-layer films in aqueous solutions

16:15 Paavo Penttilä
Nanoscale wood-water interactions studied with small-angle neutron scattering

16:30 Wenke Mueller
Localization of dye molecules in surfactant assemblies via SANS contrast variation

16:45 Karin Edler
Nanostructure in amphiphile-based deep eutectic solvents

Parallel Session Detailed Programme

Spectroscopy and Functional Materials (Chair: J. Ollivier)

15:30 Fabrizia Foglia
Anionic exchange membranes for fuel cells: insight into ion, polymer, and water dynamics from neutron spectroscopy

16:00 Bettina Schwaighofer
A combined experimental and computational study of oxide ion conductors

16:15 Mohamed Aouane
Endofullerenes: dynamics in confinement - $CH_4@C_{60}$ study

16:30 Peter Fouquet
Hydrogen mobility and reactivity in MoS_2 catalyst

16:45 Rasmus Lavén
Vibrational properties of $A PbI_3$: from harmonic vibrations to a phonon liquid

Parallel Session Detailed Programme

Imaging for Archeology and Material Science (Chair: Alessandro Tengattini, Robin Woracek)

09:00 Stephen Hall
Using neutrons to explore processes in geomaterials

09:30 Hanna Isaksson
Dual modality neutron and X-ray tomography data from skeletal tissues

10:00 Camilla Larsen & Stavros Samothrakitits
Laue and time-of-flight neutron diffractive imaging methods for 3D grain mapping of polycrystalline materials

Diffraction for Energy and Sustainability (Chair: Th. Hansen, W. Schweika)

09:00 Anatoliy Senyshyn
Quantification of operation-driven active material losses in Li-ion batteries using neutron diffraction

09:30 Neelima Paul
Neutrons to understand improvement in battery performance on electrode modification

09:45 Ida Nielsen
The first neutron investigation of multiple phase transitions in Prussian White

10:00 François Goutenoire
Exploring phase diagrams with neutron powder diffraction

Fundamental and Particle Physics: Experiment Highlight (Chair: V. Santoro)

09:00 Francesc Morabal Capilla
Neutrino-Nucleus Coherent Scattering, ESS Research Program Status

09:30 Karina Bernert
Measurement of the Fierz interference term with PERKEO III

09:45 Michael Jentschel
Diffraction enhanced experiments for particle physics

10:00 Richard Wagner
The Neutron - anti-neutron oscillation (NNBAR) experiment at the ESS

10:15 Hanno Filter
Status of the PanEDM neutron electric dipole moment experiment

Parallel Session Detailed Programme

Large Scale Structures and Hard Matter (Chair: Björgvin Hjörvarsson)

09:00 Grace Causer
Topological non-collinear magnetism: from skyrmions to solitons

09:30 Emma Campillo
Analysis of time-of-flight SANS data on mesoscopic crystals such as flux line lattices

09:45 Xaver Brems
Vortex matter transport phenomena of the IMS

10:00 Sebastian Stock
In situ small-angle neutron scattering study of hydrogen physisorption in nanoporous carbons

10:15 Ahmed Alshemi
Investigating the superconducting state of 2H-NbS2

Spectroscopy and Soft Matter (Chair: D. Noferini, O. Czakkel)

09:00 Stephane Longeville
Hemoglobin S polymerization and diffusion in hemoglobin mixtures $HbF_xHbS_{(1-x)}$ and implication to Sickle cell disease

09:30 Maria Rescigno
Looking for plastic phases in water and ammonia ices by HP-QENS

09:45 Michaela Zamponi
Cooperative tracer chain dynamics in highly entangled polymer melts

10:00 Maria Paula Marques
Shining the beam on water in human cells and tissues

10:15 Peter Falus
WASP the wide angle spin echo instrument is in user operation