ISTSI2019

Innovative Simulation Tools, Shielding and Instrumentation 2019
St. Petersburg, June 29th 2019

Welcome to ISTSI2019, a SINE2020 WP8 workshop

DTU Erik B. Knudsen, Peter Willendrup,
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SINE2020

Science & Innovation with Neutrons in Europe in 2020

SINE2020, world-class Science and Innovation with Neutrons in Europe in 2020, is a consortium of 18 partner institutions from 12 countries. It is funded by the European Union through the H2020 programme.

PREPARING FOR ESS OPERATION IN 2020

TRAINING & OUTREACH → SAMPLE → SAMPLE ENVIRONMENT → INSTRUMENT → DATA & SOFTWARE

DEVELOPING INNOVATION POTENTIAL

Our user services activities are the following:

- Chemical deuteration
- Macromolecular crystallogenesis
- Sample Environment
- Data treatment software

Partners will work to advance on **R&D Technology**, as cutting-edge instrumentation and detectors are pillars supporting the world-class science that users can perform at LSF's. The project's R&D Technology activities are the following:

- e–tools & instrumentation   ← WP8
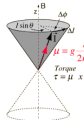- Detectors

WP8 Objectives
(and WP8 Structure)

- Task 8.1: E-tools for integrated simulation using neutronics and Monte Carlo ray-tracing

- Task 8.2: Innovative Shielding Concepts and Materials

- Task 8.3: Compact Instrumentation for Larmor Labelling applications at the ESS

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WP8 Objectives
(and WP9

- Task 8.1: E-tools for integrated simulation using neutronics and Monte Carlo ray-tracing

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Improve "cradle to grave" instrument-modeling capability beyond state of the art:

neutronics + ray-tracing → signal / noise

Science & Technology Facilities Council

RIDGE

Measure and understand (high-energy) background and utilise this to better shield our instruments using new shielding approaches (heavy concrete, laminar shielding)
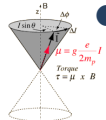
T U Delft

Investigate the effect of the ESS pancake / butterfly moderator on the design of NSE and Larmor labelling instruments at this facility

Time	Topic	Speaker
9:30-9:40	**Welcome**	
9:40-10:00	*News from the RESTRAX/SIMRES project, including MCPL support and McStas bindings for SIMRES*	**Jan Šaroun, NPI**
10:00-10:20	*News from the Vitess project including MCPL support*	**Egor Vezhlev, FZJ**
10:20-10:40	*News from the McStas project, including interoperability solutions for SIMRES, Vitess and MCNP*	**Peter Willendrup, DTU/ESS**
10:40-11:00	*Developments in the MCPL software framework*	**Thomas Kittelmann, ESS**
11:00-11:20	**Coffee break**	
11:20-11:40	*An optimised neutron super mirror patch for MCNP, with applications (ESS-Bilbao)*	**Esben Klinkby, DTU/ESS**
11:40-12:00	*ESS-developed "duct source" for describing neutron guides in Geant4*	**Ken Andersen, ESS**
12:00-12:20	*CombLayer-driven MCNP-McStas simulations for simulating instrument signal to noise*	**Esben Klinkby, DTU/ESS**
12:20-12:40	*McStas and Scatter-logger driven calculations of prompt gamma shielding for neutron guides*	**Rodion Kolevatov, IFE**
12:40-14:20	**Lunch**	
14:20-14:40	*Studies of relevant design-parameters to enable compact Larmor devices in ESS designs*	**Katia Pappas, TUDelft**
14:40-15:00	*Magnetic field calculations for compact Larmor devices in ESS designs*	**Michel Thijs, TUDelft**
15:00-15:20	*Simulation benchmarks for experiments at the PSI BOA beamline*	**Erik Knudsen, DTU**
15:20-15:40	*Extensions to the Bonner Sphere Spectrometer at PSI, plus experiments and simulation benchmarking for newly developed concrete*	**Masako Yamada, PSI**
15:40-16:00	*Development and studies of Polyethylene-B4C concretes at ESS*	**Ken Andersen, ESS**
16:00-16:20	**Coffee break**	
16:20-16:40	*Studies of material composition and neutron activation*	**Eszter Dian, MTA-EK**
16:40-17:00	*Simulation studies of material irradiation*	**Esben Klinkby, DTU/ESS**
17:00-17:20	*Simulation studies of laminar shielding concepts*	**Miguel Magán, ESS-Bilbao**

16 talks

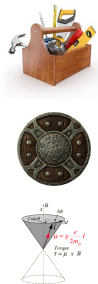| 9:30-9:40	**Welcome**	
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Workshop Contributions -> dedicated JNR issue!