

MuSR2020 Science Day

Monday December 13th – Tuesday December 14th, 2021

Venue: Zoom, Timing UK (GMT)

(Speakers should allow time for discussion within their allotted time)

Monday 13th December 2021

15:00

Welcome

Adrian Hillier/Roberto De Renzi (MuSR2020, conference chairs)

15:10

Understanding defects in SiC using low-energy muons

Judith Wörle, ETH Zurich, Switzerland

Inspired from **Interaction of low-energy muons with defect profiles in proton-irradiated Si and 4H-SiC**, Phys. Rev. B **100** 115202 (2019)
<https://doi.org/10.1103/PhysRevB.100.115202>, and **Low-energy muons as a tool for a depth-resolved analysis of the SiO₂/4H-SiC interface**, Materials Science forum, **1004**, 581, 2020 <https://www.scientific.net/MSF.1004.581>

15:40

Understanding ancient manufacturing techniques and economic crisis through μ XES analyses of Roman Gold Coins

George Green, Ashmolean Museum and Oxford University, UK

Inspired from **Understanding Roman Gold Coinage Inside Out**, Journal of Archaeologic Science, **134**, 105470 (2021)
<https://www.sciencedirect.com/science/article/abs/pii/S0305440321001400>

16:10

Break (15 mins)

16:25

Title: tbc

Martin Dehn, University of British Columbia, Canada

Inspired from **Muon-Polaron Complexes in Fe₂O₃**, Phys. Rev. Lett **126**, 037202, 2021
<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.126.037202>

17:55

Title: tbc

Paul Percival, Simon Fraser University, Canada

Inspired from **Investigation of H atom and free radical behaviour in clathrate hydrates of organic molecules**, Radiation Physics and Chemistry, **168**, 108532, 2020
<https://www.sciencedirect.com/science/article/abs/pii/S0969806X19310850>

18:25

Title: tbc

Vadim Grinenko, Dresden, Germany

Inspired from **Unsplit superconducting and time reversal symmetry breaking transitions in Sr₂RuO₄ under hydrostatic pressure and disorder**, Nature Communications 2021,
<https://www.nature.com/articles/s41467-021-24176-8>

Tuesday 14th December 2021

7:55 Convene

8:00 Search for Time-Reversal Symmetry Breaking in Unconventional Superconductors
Ravi Singh, IISER Bhopal, India

Inspired from **Unconventional superconductivity in Non-centrosymmetric superconductors** (<https://journals.aps.org/prb/abstract/10.1103/PhysRevB.103.174502>, <https://journals.aps.org/prb/abstract/10.1103/PhysRevB.103.054501> and <https://iopscience.iop.org/article/10.1088/1361-6668/abe4b7>)

8:30 Title: tbc
Amba Pant, KEK, Japan

Inspired from **Muonium response to low oxygen levels in haemoglobin and other biological aqueous solutions and potential application towards monitoring hypoxia** Nucl. Instrum. Methods Phys. Res., Sect. A, **1011**, 165561 (2021)
<https://www.sciencedirect.com/science/article/pii/S0168900221005465>

9:00 Break (15 mins)

9:15 Title: tbc
Izumi Umegaki, KEK, Japan

Inspired from **Nondestructive High-Sensitivity Detections of Metallic Lithium Deposited on a Battery Anode Using Muonic X-rays**, Anal. Chem. **92** (2020) 8194-8200
<https://pubs.acs.org/doi/10.1021/acs.analchem.0c00370>

9:45 Muon spectroscopy for operando measurements of lithium diffusion
Innes McClelland, Sheffield/ISIS, UK

Inspired from **In Situ Diffusion Measurements of a NASICON-Structured All-Solid-State Battery Using Muon Spin Relaxation**, ACS Appl Energy Mater. 2021 Feb 22; 4(2):1527-1536 <https://pubs.acs.org/doi/10.1021/acsaem.0c02722>

10:15 Close