



# Positive Spin : the start-up issue

The Newsletter of the ISIS Muon Group

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April 2015

## News

### WELCOME

"Welcome to the new edition of 'Positive Spin'. All things come to an end and its my time to leave FAP 6; the new chair is Pietro Carretta (Pavia, Italy). We always look for new FAP candidates so if you are interested then let [Aidy](#) know; its a useful way to learn about what other folk do with  $\mu^+$  and to improve your ability to write successful proposals. You are not getting rid of me totally. I remain as a 'Muon' representative on the ISIS User committee and am working for you on ENSA and NMI3. Enjoy, [Don](#)"

### $\mu$ SR MEET CDT STUDENTS ... CDT STUDENTS MEET $\mu$ SR

In March 2015 the ISIS muon group introduced over 70 first-year PhD students within UK

## Instrumentation

### $\mu^+$ BEAMLINE UPGRADE

The 1st stage of the muon beam upgrade (replacing the two quadrupoles nearest the production target with a new triplet) is complete, and the beam tuning has been optimised for this layout. While exact improvements to measured count rate are configuration dependent, a rate increase of at least 1.6 is observed across all instruments, with negligible change in spot size. Stage 2, to replace the remaining components common to the three beams, is planned next year and we now have funding to purchase new quadrupoles for EMU and HiFi

**ISIS Access**  
Autumn / Winter 2015  
Next proposal deadline:  
16<sup>th</sup> April 2015

research-council funded Centres of Doctoral Training to  $\mu$ SR. Contributing to the [Introduction to ISIS and Diamond facilities for CDT students](#) initiative, the group highlighted applications of this exotic probe through research focussed primers and worked analysis. Student feedback showed that an introduction to  $\mu$ SR was most welcome; some participants already planning their first  $\mu^+$  experiment!

### FUTURE MUON SOURCES

A meeting between the Accelerator Applications Network of EuCARD2 and NMI3's Muon [JRA](#) was hosted by Bob Cywinski at

and an extra one for MuSR

### QUANTUM UNLEASHED

QUANTUM, software for calculating  $\mu^+$  interactions, now runs in conjunction with Mantid and is no longer confined to Windows OS. For further details click [here](#) and send feedback to [James](#)

### INSTRUMENT SIMULATION

In 2014, Ricardo Afonso, (studying in the UK on the Science Without Borders programme) worked on designs for future muon instrumentation. His results for MuSR not only allowed optimization of the brass beam line degraders but also

**UK Neutron and Muon Science and User Meeting**  
19th - 21st May 2015  
Leicestershire

Click [HERE](#) for registration and further information

**Tuesday 19<sup>th</sup>**  
Muon Site Calculation Meeting OR Student Day

**Wednesday 20<sup>th</sup>**  
Science Day

**Thursday 21<sup>st</sup>**  
User Meeting

[Huddersfield University](#) to discuss development of future muon sources. Talks considered new technologies required for the production of Ultra Slow beams and  $\mu^+$  Microscopes as well as a forward look to new applications of muon techniques. Slides from the presentations can be found [here](#).

enable a new beam snout to be installed in the future. Such improvements will ensure more efficient use of the incident beam and enhance the information obtained per implanted  $\mu^+$ . Designs for future muon spectrometers are summarized in report, [RAL-TR-2015-001](#)

### NEW PREPARATION LAB

The  $\mu^+$  beam lines now have access to a fully-refurbished, general use, sample preparation laboratory. Located near muons, the lab is operational but should you not find specific equipment please talk to your local contact or send suggestions for additional services to [Fiona](#)

## Science highlights

PAPERS RESULTING FROM ISIS WORK ARE AN IMPORTANT OUTPUT AND INCREASINGLY USED AS A MEASURE OF THE VALUE OF THE FACILITY. PLEASE KEEP US UP TO DATE WITH YOUR PUBLICATIONS. WE HAVE COMPILED LISTS FOR RECENT YEARS THAT ARE NOW AVAILABLE AT [WWW.ISIS.STFC.AC.UK/GROUPS/MUONS/PUBLICATIONS](http://WWW.ISIS.STFC.AC.UK/GROUPS/MUONS/PUBLICATIONS) PLEASE INFORM US IF ANY ARE MISSING.

- IMMERSION PRECIPITATION: AN ALTERNATIVE TO SOLVENT CASTING FOR ORGANIC SOLAR CELLS
- STRAIN-INDUCED EXTRINSIC HIGH-TEMPERATURE FERROMAGNETISM IN THE Fe-DOPED HEXAGONAL BARIUM TITANATE
- FIRST ACCURATE EXPERIMENTAL STUDY OF MU REACTIVITY FROM A STATE-SELECTED REACTANT IN THE GAS PHASE
- 13TH INTERNATIONAL CONFERENCE ON MU SR
- SOFT CHEMICAL CONTROL OF SUPERCONDUCTIVITY IN LITHIUM IRON SELENIDE HYDROXIDES
- BROKEN TIME-REVERSAL SYMMETRY PROBED BY MUON SPIN RELAXATION IN THE CAGED TYPE SUPERCONDUCTOR LU5Rh6Sn18

## Dates for your diary

- ISIS PROPOSAL DEADLINE: 16 APR 2015
- MUON SITE CALCULATION MEETING, LEICESTERSHIRE, 19 MAY 2015
- ISIS NEUTRON AND MUON USER MEETING, 19-21 MAY 2015
- NEW APPLICATIONS OF MU SR: STUDIES OF SOFT MATTER & SPECTROSCOPY OF EXCITED STATES, QUEEN MARY, LONDON, 3-4 SEPT 2015

## Any other business...

**PUBLICATIONS** Please inform your local contact and the ISIS User Office of publications arising from work on Muon instruments. A link to the work can then be included on the STFC publications database: <http://epubs.stfc.ac.uk>

**CO-AUTHORS** Please remember to include Muon Group staff as co-authors on publications when deemed appropriate

**CYCLE DATES** Forthcoming cycle dates

Further information: [Muon Group Homepage](#) - [Group Members](#) - [HiFi](#) - [MuSR](#) - [EMU](#) - [ARGUS](#)