



Welcome to the AVA Kick-off Meeting



Department of **Physics**

Explore. Discover. **Achieve.**



The Department

- +50 academic staff
- 40 research staff
- +100 PhD students
- +300 undergraduate students (all years) (~6 per academic)
- Projected intake ~110 students



- Physics Research areas: **Astrophysics** **Medical** **Nuclear**
Renewable Energy **Biophysics** **Particle**
Materials **Accelerators**



Student Experience
Winner 2015

theguardian
UNIVERSITY
AWARDS

Winner
2013

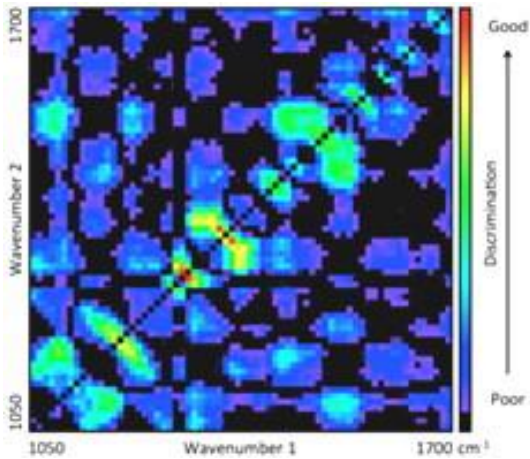
Why
THE UNIVERSITY
OF LIVERPOOL

World Class Teaching Facility

Up to 30 identical sets of high spec equipment for individual work

- NI ELVIS prototyping boards
- Research grade gamma-ray systems
- X-ray diffractometers with computed tomography units
- Hand-held X-ray fluorescence analyser

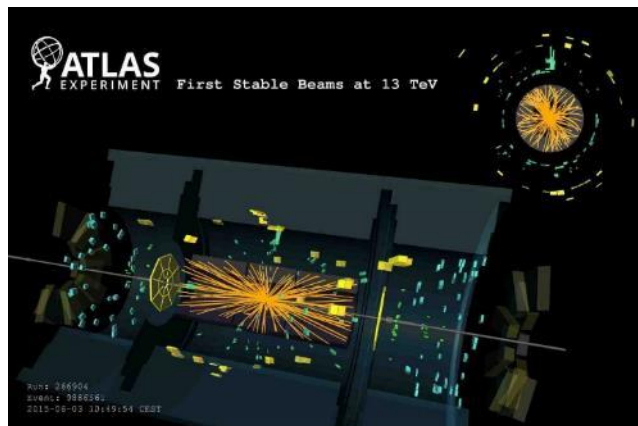




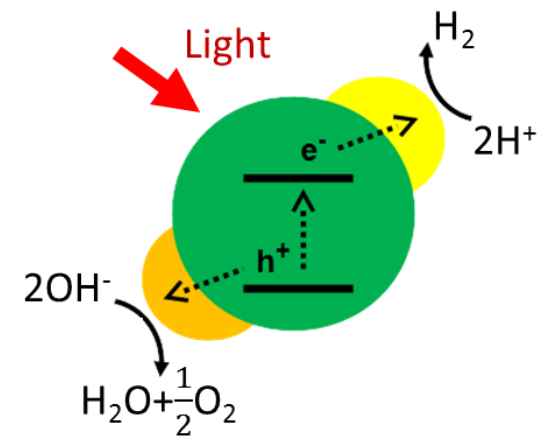
New methods for cancer
detection



Fundamental understanding
of nuclei shapes



Detection and study of the Higgs
boson with Liverpool detectors

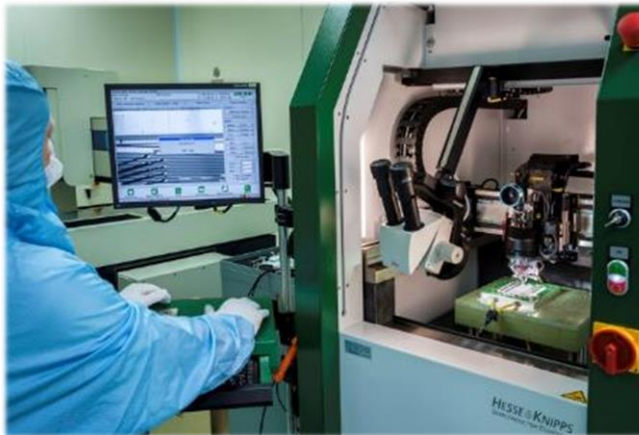


Nanocrystals for H₂ generation



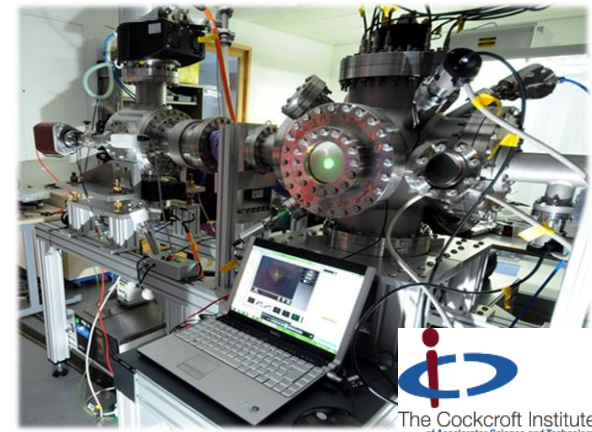
Stephenson Institute for Renewable Energy

R&D into energy conversion, storage and enabling technologies



Liverpool Semiconductor Detector Centre

Clean room facility for the development of new detectors for particle, nuclear and astrophysics

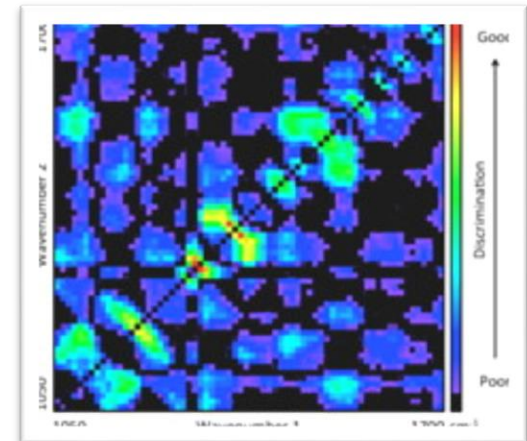
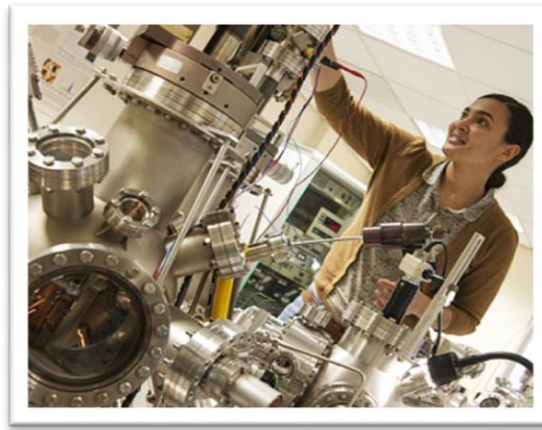


Cockcroft Institute, Daresbury

New accelerators for fundamental science and industry applications

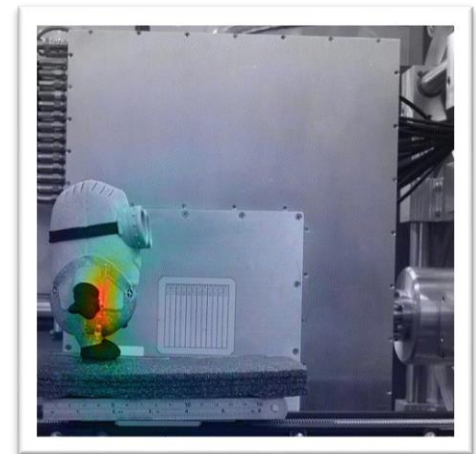
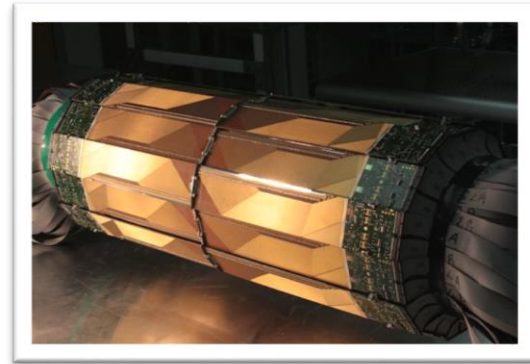
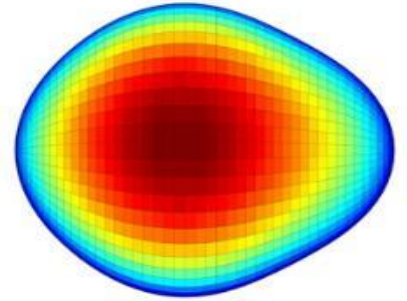
Condensed Matter

- We study nanoscience, biophysics and surface physics
- We are developing new methods for cancer detection and image analysis tools for a host of applications
- We are world leaders in the development of solar fuels and solar cells



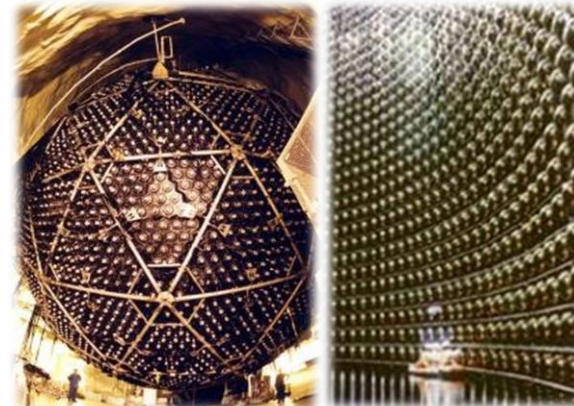
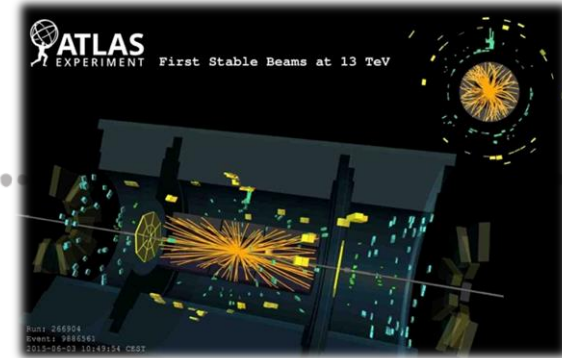
Nuclear Physics

- We develop and use state-of-the-art radiation detectors to study the properties of exotic nuclei
- We discovered nuclei can be pear shaped !
- We play a leading role in the study of antihydrogen
- We study superheavy elements
- We develop new gamma-ray imaging techniques for medical imaging and security applications



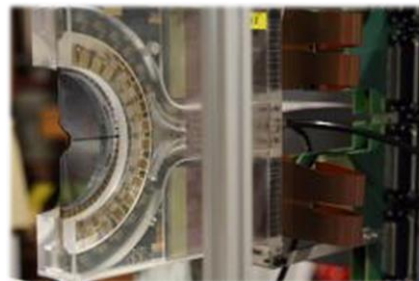
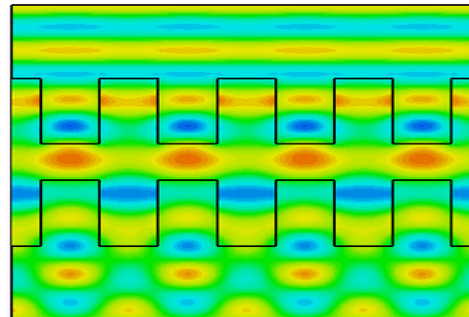
Particle Physics

- One of the largest UK particle physics groups, studying the fundamental building blocks of the universe
- Co-winners of the **2016 Breakthrough prize** for the discovery and study of neutrino oscillations
- Leading roles in the measurement and study of the Higgs particle
- Expertise in radiation hard detectors



Accelerator Physics

- Beam diagnostics
- Accelerator design
- Novel technologies –
accelerator in-a-chip
- Large scale facilities
- Accelerator applications



Marie Curie Networks



(Beam Diagnostics, **Physics**)
4.2 M€, 32 partners



(Laser Applications, **Engineering**)
4.6 M€, 38 partners



(Accelerator Optimization, **Physics**)
6 M€, 35 partners



(Medical Accelerators R&D, **Life Sciences**)
4.0 M€, 24 partners



 Largest portfolio of EU networks in any scientific area.
Beam diagnostics as backbone. All led by CI/Liverpool.

Summary

- Research across four clusters with coverage of both, discovery science and applied research;
- Specialized inter-disciplinary institutes maximize impact and reach
- Capabilities (e.g. Semiconductor lab, Stephenson Institute) that few other universities have.

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