Cockcroft Institute
Dielectric and THz Acceleration (DATA)
research programme

Education, Training & Califes programme

* G Burt, R. Leitzia, C. Paoloni,
Y. Saveliev, **S.P. Jamison**
C.P. Welsch,
D.M. Graham, H. Owen, G. Xia, R.B. Appleby,
A.W. Cross, K. Ronald, A. Phelps

* Project leads

Lancaster University
STFC Daresbury Laboratory
University of Liverpool
University of Manchester
University of Strathclyde

Cockcroft PhD student intake

Participating University	Lancaster	Liverpool	Manchester	Other	Total
Current students	12	20	9	4	45
Completed Students	20	14	26	2	62
Of which due to submit in <6 months	1	3	3	0	7

Student numbers at the CI since 2006 (as of Oct 2015)

+ similar numbers of Post-doc researchers

DATA programme (current numbers): 6 PhD, 3 PDRA

Waveguide and traveling wave
THz acceleration team, Oct 2016

Cockcroft PhD lecture programme

- Compulsory postgraduate lecture programme for Cockcroft PhD students.
  - 168 hours of lectures (including options)
  - Students complete 120 hours over 2 years.
  - Additional tutorials and practical exercises.
- The course is split into five topics
  - General Accelerator courses
  - Beam Dynamics
  - RF
  - Magnets and Undulators
  - Short wavelength accelerators
- Lectures are webcast and archived. Recordings and lecture notes are free to view

https://www.cockcroft.ac.uk/lectures-2

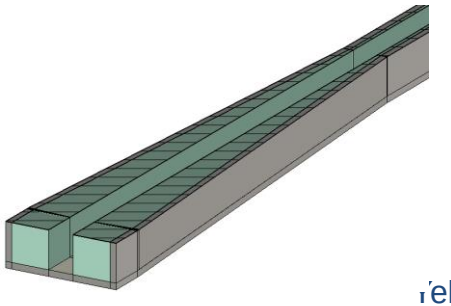
New ‘short-wavelength acceleration’ courses

Course name	# lectures	Topics	Lecturers
Introduction to Short-wavelength Accelerators	4	Broad overview	Guoxing Xia
PWFA	6	Electron, positron or proton driven wakefield accelerators	Bernhard Hidding / Guoxing Xia
Lasers for Accelerators*	4	Laser systems for accelerators and beam diagnostics	Steve Jamison
Novel electromagnetic materials for high frequency accelerators	8	Laser/ THz / beam driven dielectric accelerators	Rosa Letizia
Numerical methods (and Particle-in-cell)	4	Overview of numerical methods, using PIC as example	Alec Thomas
Compact Particle and Photon Sources	6	LWFA, x-ray sources, ion acceleration and neutron generation	Louise Willingale

DATA PhD students & projects

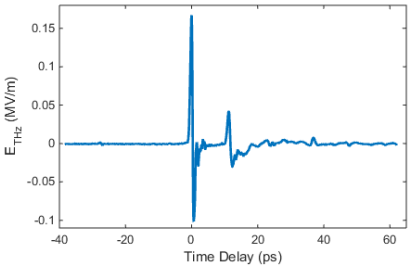
Alisa Healy

Dielectric-lined waveguides for terahertz-driven electron manipulation



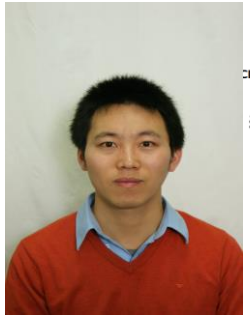
Dan Lake

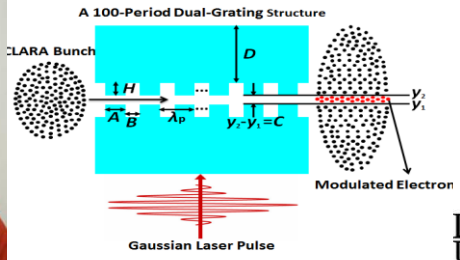
THz radiation sources for particle acceleration applications



Yelong Wei

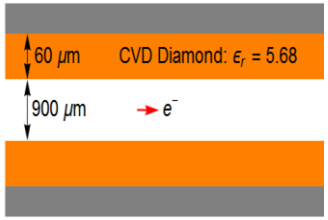
Design of dual-grating dielectric laser-driven accelerators





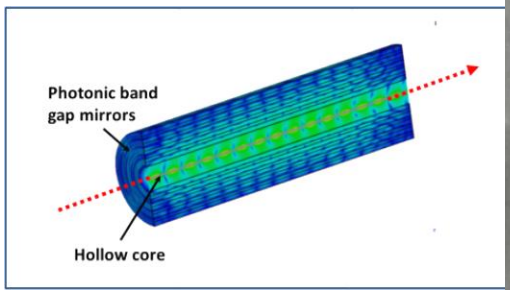
Thomas Pacey

dielectric wakefield Interactions for particle acceleration and bunch manipulation



Andrew Vint

Mid-IR Photonic band-gap wave-guide for DLAs



Califes role in training

Placement of Students & post-docs for experimental campaigns

- 1-3 months during experiments
- longer-term placements for a few PDRA or students

Experiments will be complex & cross-disciplinary

Diagnostics – OTR, CDR, deflecting structures, spectrometers, …
Beam delivery, optics (matching into structures)
Beam physics (space charge, emittance growth, …)
Timing, synchronisation
Roles structured to develop wide accelerator sci-tech understanding

Exposure to practicalities– embedding ‘on-paper’ understanding

Opportunities for wider student/PostDoc contributions to Califes

e.g. PDRA’s on laser-RF synchronisation, & feedback/stablisation
potential training (and contribution) in application to Califes