

Welcome to QMUL Prof. Adrian Bevan





- 5 Inner London campuses
- 3 Faculties: Science and Engineering, Medicine & Dentistry, Humanities and Social Sciences
- Long history of studying radiation effects and developing instrumentation

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Housekeeping

- In case of fire, exit the building and follow locals to the assembly point in Library Square (follow locals out of the building, we will direct you to that point in the event of a fire alarm)
- We have a zero tolerance approach to inappropriate behaviour
- Participants are expected to be respect and professional of participants, staff and students
- Hope that you all enjoy the meeting and your visit to London and the
- Lunch, coffee and reception today in the lobby area on the ground floor (where you registered)
- We hope that you all enjoy the meeting and your visit to London

QMUL highlights

- Origins of QM date back to 1123 (Bart's Hospital)
- 1785: UK's first medical school founded
- 1886: Mile End Campus founded and our Physics department was created
- 1909: Marsden and colleagues studied U and Th to understand the nature of α decay
- 1964: UK's first university-based nuclear reactor
- Long history of silicon detectors dating back to the OPAL vertex detector for LEP and the ATLAS SCT
- Target science through to product development
- 3 physics related Nobel Prizes: Joseph Rotblatt (Non-proliferation), Peter Mansfield (MRI) and Charles Kao (Optical Fibres)



QMUL's first nuclear reactor

Detector Development Facilities

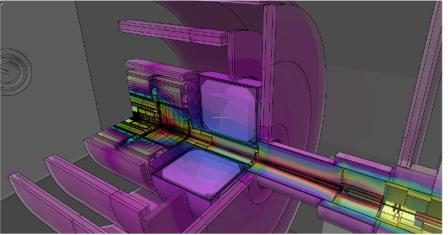
- Clean rooms with semiautomatic probe stations and automatic wire bonders for wafer testing and module assembly
- Test equipment for device testing

Assembly areas, including thermal QC and metrology systems

Sensor visual capture systems for sensor QC



Cleanroom for sensor testing



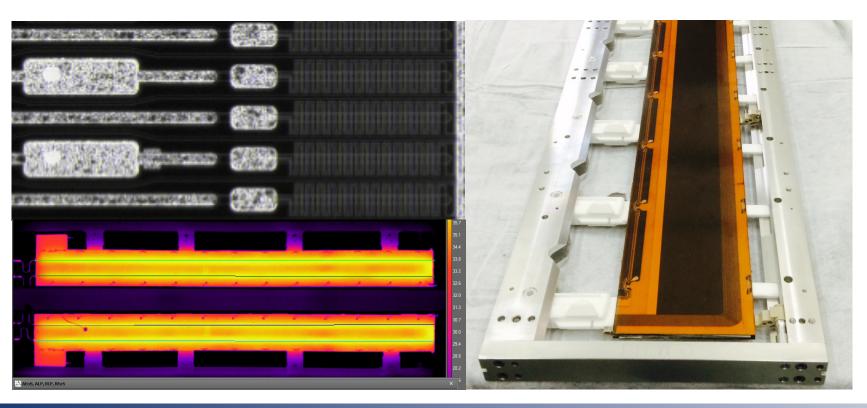
Broad simulation capability



New probe station for 300mm wafer probing (in 2nd clean room)



- Focus on radiation sensing for particle physics
 - Silicon Detector Upgrade for ATLAS
 - Starting to work on the Belle 2 silicon detector upgrade



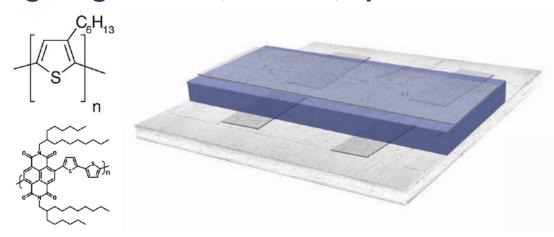
- Sensor testing
- Stave QC
- Precision mechanics for module mounting, stave transport and testing
- Design engineering solutions

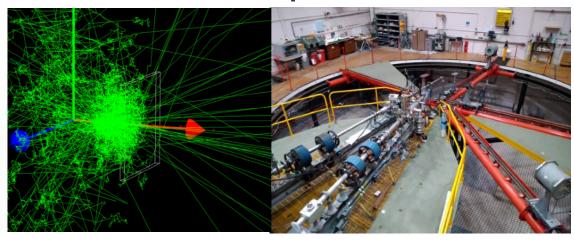


R&D targeting novel technologies and real world applications include

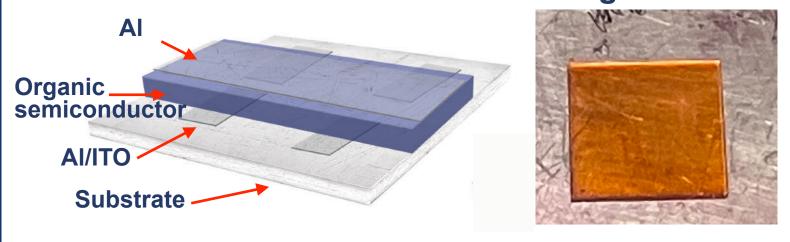
- Ultrathin curved silicon
- CVD Diamond
- Organic semiconductor radiation detectors
- Perovskite radiation detectors
- Long range alpha detectors
- Single electron quantum devices

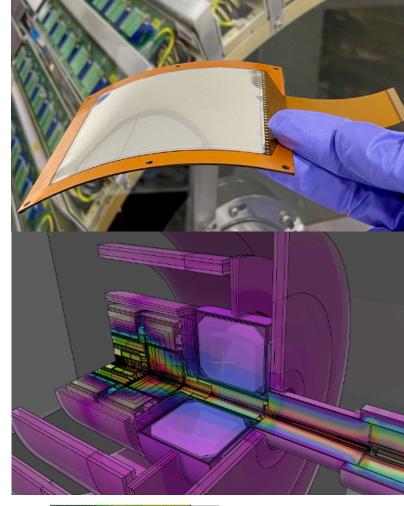
Targeting medical, nuclear, space and basic research and development

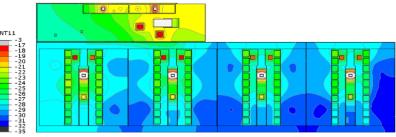




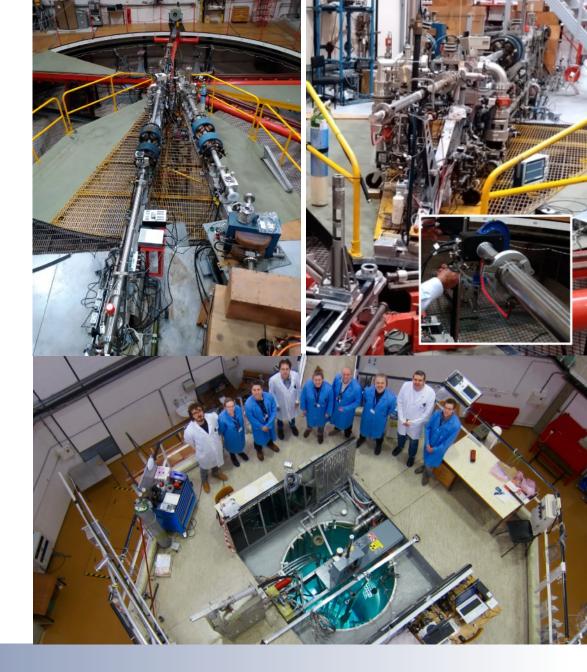
- Sensor and wafer testing
- Module design and assembly
- Radiation environment simulation
- Thermal simulation
- Mechanical design
- Precision mechanical engineering and systems integration
- Novel device fabrication and testing







- Well equipped laboratories
- Field test experience including
 - Test beam facilities
 - Neutron facilities
 - Sample irradiation
 - Research reactors



Our research is funded by multiple public sources











and funded or enabled via our commercial partners:









	Welcome and a history of detector development at QMUL	Prof. A BEVAN
	Skeel LT, People's Palace	09:30 - 09:55
10:00		S C411.00
10.00	ATLAS Inner Detector system and performance	Bruce GALLOP
	Skeel LT, People's Palace	10:00 - 10:25
	Coffee	
	Skeel LT, People's Palace	10:30 - 10:55
11:00	CMS silicon detector and performance	Suvankar CHOWDHURY
	Skeel LT, People's Palace	11:00 - 11:25
	ALICE silicon detector and performance	Ivan RAVASENGA
	Skeel LT, People's Palace	11:30 - 11:55
12:00	LHCb silicon vertex detector	David FRIDAY
	Skeel LT, People's Palace	12:00 - 12:25
	Lunch	
13:00		
13:00	Charl LT Despire Dalace	12-20 - 12-25
13:00	Skeel LT, People's Palace	12:30 - 13:25
13:00	Skeel LT, People's Palace Mu3E silicon detector	12:30 - 13:25 Ashley MCDOUGALL
13:00		
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17:00 Reception



ATLAS Inner Tracker Upgrade	Anastasia KOTSOKECHAGIA
Skeel LT, People's Palace	09:00 - 09:25
Break	
Skeel LT, People's Palace	09:30 - 10:00
ALICE silicon detector upgrades	Jian LIU
Skeel LT, People's Palace	10:00 - 10:25
Belle 2 silicon detector upgrade	Christian FINCK
Skeel LT, People's Palace	10:30 - 10:55
Break/Tours	
Skeel LT, People's Palace	11:00 - 12:00
NA62 Gigatracker and silicon detector upgrade for HIKE	Alina KLEIMENOVA
Skeel LT, People's Palace	12:00 - 12:25
LHCb Upgrade 2 silicon detectors	Scott ELY
Skeel LT, People's Palace	12:30 - 12:55
Eunch	
Skeel LT, People's Palace	13:00 - 14:00
CMS silicon detector upgrade	Giacomo FEDI
Skeel LT, People's Palace	14:00 - 14:25
Strasbourg CMOS R&D	Serhiy SENYUKOV
Skeel LT, People's Palace	14:30 - 14:55
Coffee	
Skeel LT, People's Palace	15:00 - 15:25
Bonn CMOS R&D	Christian BESPIN
Skeel LT, People's Palace	15:30 - 15:55
DESY test beam facility	Adrian HERKERT
	16:00 - 16:25



Dinner suggestions

- Locally we recommend
 - The Lord Tradegar: a nice local pub with good food and beer
 - The Pizza Room: good pizza
 - The Coffee Room: good coffee
 - Lots of places nearby (see suggestions on the next page)
- A short walk or tube ride to Aldgate East will put you near Brick Lane.
 Lots of great Indian Restaurants in that part of town
- If you plan on sight seeing then a tube journey into town will give you plenty of options
- If you do a search in the local area you will find a number of other suggestions of places to eat (e.g. the other side of Victoria park)



The Lord Tredegar Some local eateries Gurdwara (2) (2) Coborn Motors * Student campus outlets, can have 🗦 Tutelage Court Morgan Arms long queues during the day ilway Bridge e Plaque Morgan St Aca Mile End Climbing Wall Morgan St Texaco-Grove-Road Scape Mile End Mile End Park The Cobor Canalside green space for cycling The Heritage & Arts Tredegar Centre - The HAC Bow Terrace Garden Central Fo Square CR Pilates & Park Villa Pooley House Reformer Retreats **Boutique Hostel** Xavier Cottage People's Palace Projects iohn foward guitar tuition Maurice Court unity **Beaumont Court** Mile End Hindu Pragati Sangha Community Garden Gateway Housing Stay QM at Queen Mary Association **(5)** University of London Beauty Magic The Pizza Room - Mile End (1) Fire-baked pizza in Varey House rustic-chic quarters Rusty Bike Pub Mile End Chesney House The Curve Mile End (6) spital 🕕 Mile End + Maynard House Francis Bancroft Building Lock-keeper's Cottage Graduate Centre School of Business Coniston House and Management... Joseph Priestley Building Tower Hamlets GP Hatton House Care Group CIC Burdett 6Burgerz Mile End Beatrice Tate School Shakes, wings **(4)** & more in a casual... Southern Grove University of London New Graduate Centre Mile End Post Office Community Centre (9) **Future Connect Training** ibrary. (10)Ground Café and Recruitment... FoTHCP Heritage Trail - Post 1 Ch (11)nts' Union Hub 🤠 We are here Hamlets Way The Soanes Centre Shoyu Cafe The Kitchen Fielder Apartments Med's Cafe 15 min 🔻 Goddard Veterinary Layers No travel time for walking. Select driving Group, Mile End

Pizza

- 1. Pizza Room
- 4. Cherry Tree

Pubs:

- 2. Lord Tredegar
- 3. Coburn Arms

Coffee:

- 5. Coffee Room
- 6. Starbucks
- 7. Costa
- 8. The Curve (*)
- 9. Ground (*)
- 10. Grad Centre (*)

Other

- 11. Ariana (Persian)
- 12. Efes (Turkish)

QMUL's Detector Development Group

A multidisciplinary team of experts working on

- Novel radiation sensing technologies
- Instrument design and construction
- Radiation damage simulation

Technologies

Quantum
Diamond
Silicon
Organics
Graphene
Perovskite

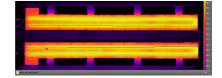
Scintillator

Simulation

ABAQUS
DL_POLY
FLUKA
GEANT4
MCNP6
Zeemax



Fully equipped ISO 7 certified clean room

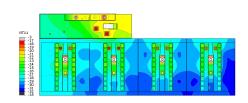


Infra-red thermal imaging system

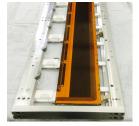
for particle physics and industrial application



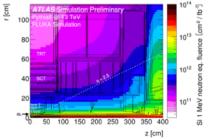
Silicon strip sensors for LHC



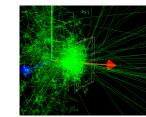
Heat transfer simulation for detector system cooling design



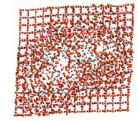
Module assembly engineering



FLUKA radiation environment simulations



Geant4 sensor interaction simulations for neutron detector development



DL_Poly material damage simulation