

## Introduction to Physics at Bristol



Nick Brook – Head of School

# Science at Bristol

- 7 Schools
  - Biological Science, Chemistry, Earth Sciences, Experimental Psychology, Geographical Sciences, Mathematics, Physics
- 3 research centres
  - Centre for Nanoscience & Quantum Information
  - Interface Analysis Centre
  - Cabot Institute
- Faculty's research activity
  - Two-thirds: “world leading” or “internationally excellent”
  - 95% - “internationally recognised”
  - Ranked 3<sup>rd</sup> in the country after Oxford & Cambridge



# Physics at Bristol

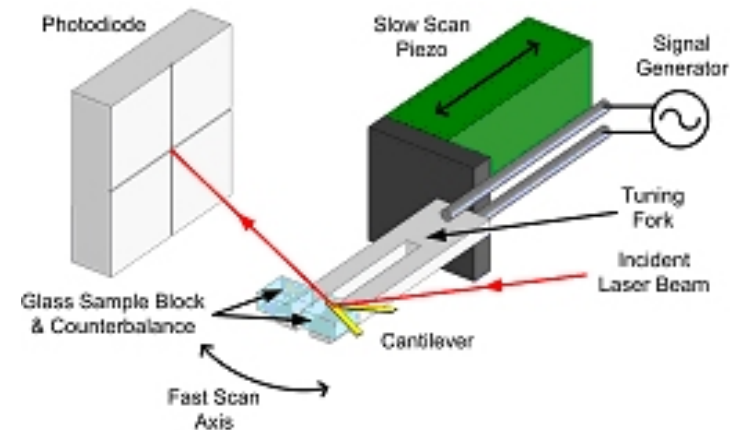


- Department is rated “excellent” in teaching & “world leading” in research
- Research income ~£7m per annum
  - ~ $\frac{2}{3}$  UK research council funding
  - Remaining  $\frac{1}{3}$  mixture of EU, US and industrial funding
- 8 research groups/centres
- ~40 full time academics
  - Large UK Physics department with over 80 teaching & research staff
  - ~100 postgraduate research students
  - Currently ~165 new undergraduates every year
- Previous Heads of the Department Nobel Prize Winners
  - Powell - 1950
  - Mott - 1977



# 🔥 Physics at Bristol

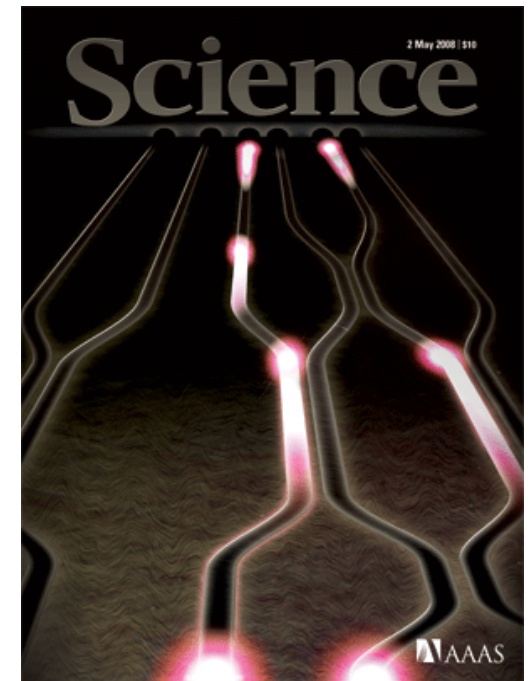
- Experimental Physics Group
  - Astro:
    - Cosmology
    - Galaxy formation
    - Extrasolar planets
  - Particle Physics:
    - High Energy Frontier: CMS experiments
    - Flavour Physics: LHCb, CLEO-c, NA62
  - Correlated Electrons:
    - high temp. superconductors, topological insulators, use of positrons to investigate materials
  - Nano & Soft physics:
    - Polymer physics
    - Nanofabrication, nanoassembly, high speed atomic force microscopy,...





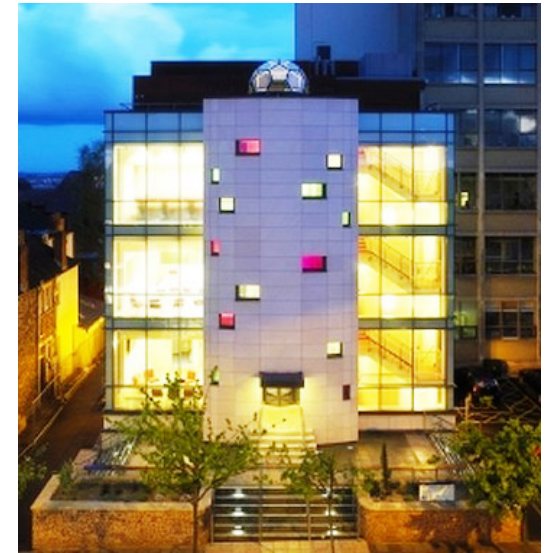
# Physics at Bristol

- Experimental Physics Group
  - Micro & Nano physics:
    - Applied Spectroscopy & Device Thermography & Reliability – III-V nitrides
    - Surface physics
    - Electromicroscopy
  - Quantum Photonics:
    - Optical Quantum Computing
    - Quantum cryptography
    - Integrated quantum photonics
    - Quantum metrology



# NSQI at Bristol

- Bristol Centre for NanoScience & Quantum Information
  - Cross disciplinary centre
  - £12M investment from the University
  - World's quietest building – ultra low vibration levels
    - Low electrical noise
    - Controlled environment



- Interface Analysis Centre
  - Wide range of research activities – both academic & commercial
  - Cross university links & collaborations
  - 9 research staff, 14 research students & 2 technical staff
  - £0.75M investment to move into Physics
- Wide range of analysis techniques
  - Focussed Ion Beam – high resol imaging, removal/deposition of material
  - Secondary Electron Microscopy - high resolution imaging
  - X-ray photoelectron spectroscopy – surface analysis of materials
  - Laser Raman Spectroscopy - material characterisation

