

# Laser-hybrid Accelerator for Radiobiological Applications (LhARA)

## The LhARA collaboration

- 1 Patrick G Johnston Centre for Cancer Research, Queens University Belfast, 97 Lisburn Road, Belfast, BT9 7AE, UK
- 2 School of Mathematics and Physics, Queen's University Belfast, University Road, Belfast, BT7 1NN, Northern Ireland, UK
- 3 Dept of Medical Physics and Biomedical Engineering, University College London, WC1E 6BT
- 4 Department of Medical Physics, University Hospital Birmingham Foundation NHS Trust, Edgbaston, Birmingham, B15 2TH, UK
- 5 Department of Cancer and Genomic Sciences, College of Medicine and Health, University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK
- 6 School of Physics and Astronomy, University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK
- 7 CERN, CH-1211 Geneva 23, Switzerland
- 8 Cockcroft Institute for Accelerator Science, Keckwick Ln, Daresbury, Warrington WA4 4AD
- 9 Department of Physics, Lancaster University, Bailrigg, Lancaster, LA1 4YW, UK
- 10 Department of Physics and Astronomy, The University of Manchester, Oxford Rd, Manchester, M13 9PL, UK
- 11 Central Laser Facility, STFC Rutherford Appleton Laboratory, Harwell Oxford, Didcot OX11 0QX, UK
- 12 Christie NHS Foundation Trust, Wilmslow Rd, Manchester, M20 4BX
- 13 Corerain Technologies, 14F, Changfu Jinmao Building (CFC), Trade-free Zone, Futian District, Shenzhen, Guangdong, China
- 14 Lawrence Berkeley National Laboratory, 1 Cyclotron Road, Berkeley, CA 94720, USA
- 15 The Institute of Cancer Research, 123 Old Brompton Road, London, SW7 3RP, UK
- 16 INFN Catania, Via Santa Sofia, 64 - 95123 Catania - Italy
- 17 Department of Aeronautics, Imperial College London, Exhibition Road, London, SW7 2AZ, UK
- 18 Department of Aeronautics, Imperial College London, Exhibition Road, London, SW7 2AZ, UK
- 19 CRUK PPI group, Charing Cross Hospital, London, W6 8RF, UK
- 20 Dept. Radiation Physics and Radiobiology, Imperial College Healthcare NHS Trust, London, W2 1NY, UK
- 21 Imperial College NHS Healthcare Trust, Department of Clinical Oncology, Charing Cross Hospital, London W6 8RF, UK
- 22 Department of Physics, Imperial College London, Exhibition Road, London, SW7 2AZ, UK
- 23 Department of Surgery and Cancer, Imperial College, Hammersmith Hospital London, W12 0NN, UK
- 24 Institut Curie-Orsay Research Center, Bat a Campus d'Orsay, 91400 Orsay, France
- 25 The John Adams Institute for Accelerator Science., University of Oxford, Keble Rd, Oxford, OX1 3RH.
- 26 The John Adams Institute for Accelerator Science, Royal Holloway University of London
- 27 The John Adams Institute for Accelerator Science, Department of Physics, Imperial College London, Exhibition Road, London SW7 2AZ, UK
- 28 Leo Cancer Care, Broadview, Windmill Hill, Hailsham, East Sussex, BN27 4RY, UK
- 29 Institute of Systems, Molecular and Integrative Biology, University of Liverpool, Biosciences Building, Crown Street, Liverpool, L69 7BE, UK
- 30 Department of Physics, University of Liverpool, Liverpool, L69 7ZE, UK
- 31 Division of Cancer Sciences, Faculty of Biology, Medicine and Health, The University of Manchester, The Christie Proton Therapy Centre, The Christie NHS Foundation Trust, Wimslow Rd, Manchester, M20 4BX, UK
- 32 Maxeler Technologies Limited, 3 Hammersmith Grove, London, W6 0ND, UK
- 33 National Physical Laboratory, Hampton Road, Teddington, TW11 0LW, UK
- 34 Department of Materials, University of Oxford, Parks Road, Oxford OX1 3PH, UK
- 35 Department of Oncology, University of Oxford, Old Road Campus Research Building, Roosevelt Drive, Oxford, OX3 7DQ, UK

- 36 *Particle Physics, Denys Wilkinson Building, Keble Rd, Oxford, OX1 3RH*
- 37 *Department of Physics, Imperial College London, Exhibition Road, London SW7 2AZ, UK*
- 38 *Department of Physics, University of Surrey, 388 Stag Hill, Guilford, GU2 7XH, UK*
- 39 *School of Physical and Chemical Sciences, Queen Mary University of London, Mile End, London, E1 4NS, UK*
- 40 *Rosalind Franklin Institute, Harwell Campus, Didcot, OX11 0QX, UK*
- 41 *Department of Physics, Royal Holloway University of London, Egham, Surrey, TW20 0EX, UK*
- 42 *Accelerator Science and Technology Centre, STFC Daresbury Laboratory, Daresbury, Cheshire, WA4 4AD, UK*
- 43 *Central Laser Facility, STFC Rutherford Appleton Laboratory, Harwell Oxford, Didcot, OX11 0QX, UK*
- 44 *ISIS Neutron and Muon Source, STFC Rutherford Appleton Laboratory, Harwell Oxford, Didcot, OX11 0QX, UK*
- 45 *Particle Physics Department, STFC Rutherford Appleton Laboratory, Harwell Oxford, Didcot, OX11 0QX, UK*
- 46 *Technology Department, STFC Daresbury Laboratory, Daresbury, Cheshire, WA4 4AD, UK*
- 47 *Department of Radiation Oncology, Stanford University, Stanford, CA 94305, USA*
- 48 *Department of Physics, SUPA, University of Strathclyde, Glasgow G4 0NG, UK*
- 49 *Department of Biomedical Sciences, Faculty of Science and Engineering, Swansea University, Singleton Park, Swansea, SA2 8PP, UK*
- 50 *Department of Physics, Faculty of Science and Engineering, Swansea University, Singleton Park, Swansea, SA2 8PP, UK*
- 51 *University of Santiago de Compostela, Center for Research in Molecular Medicine and Chronic diseases, 15782, Santiago de Compostela, Spain*
- 52 *Institut Curie, Universit PSL, CNRS UMR3347, Inserm U1021, Signalisation Radiobiologie et Cancer, 91400 Orsay, France*