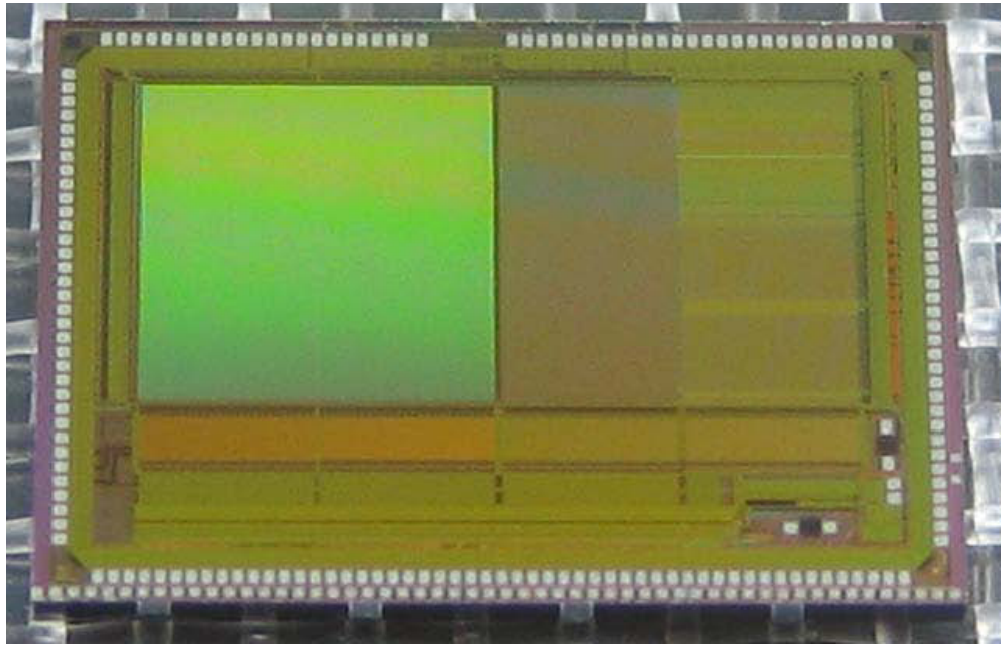
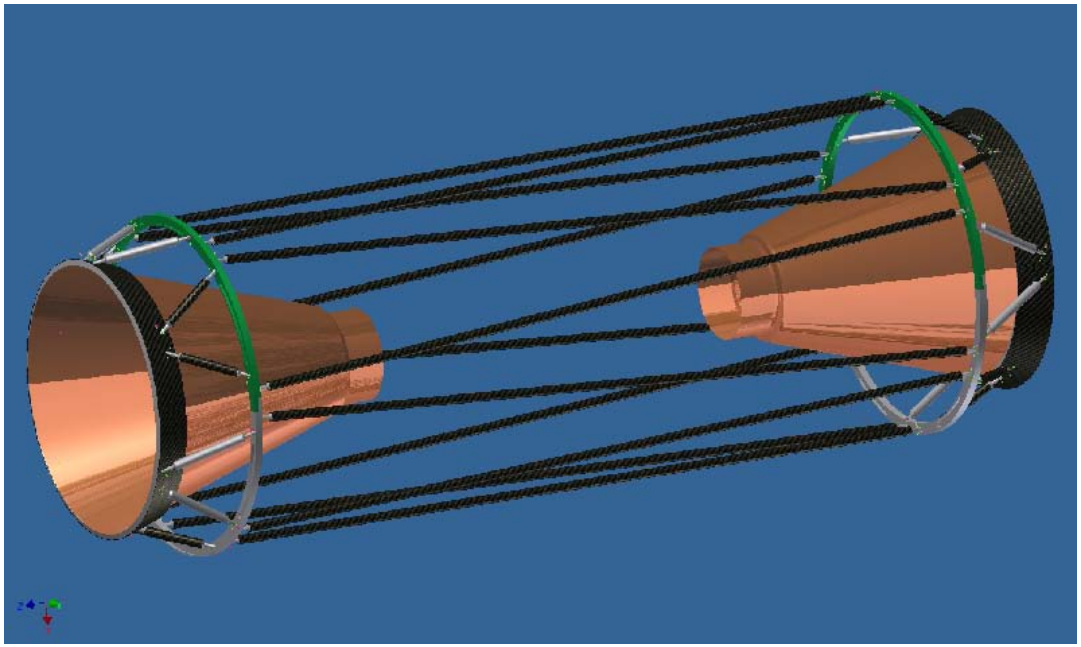
# UK Programme

- Outline:
  - Mechanics
  - Sensor Bench tests
  - 2012 Test beams
  - Sensor development



# Mechanics

- John and Fred are working with the Pisa engineers to develop a viable design for the space-frame and support cones.
  - Regular meetings have been invaluable to ensure progress on the design.



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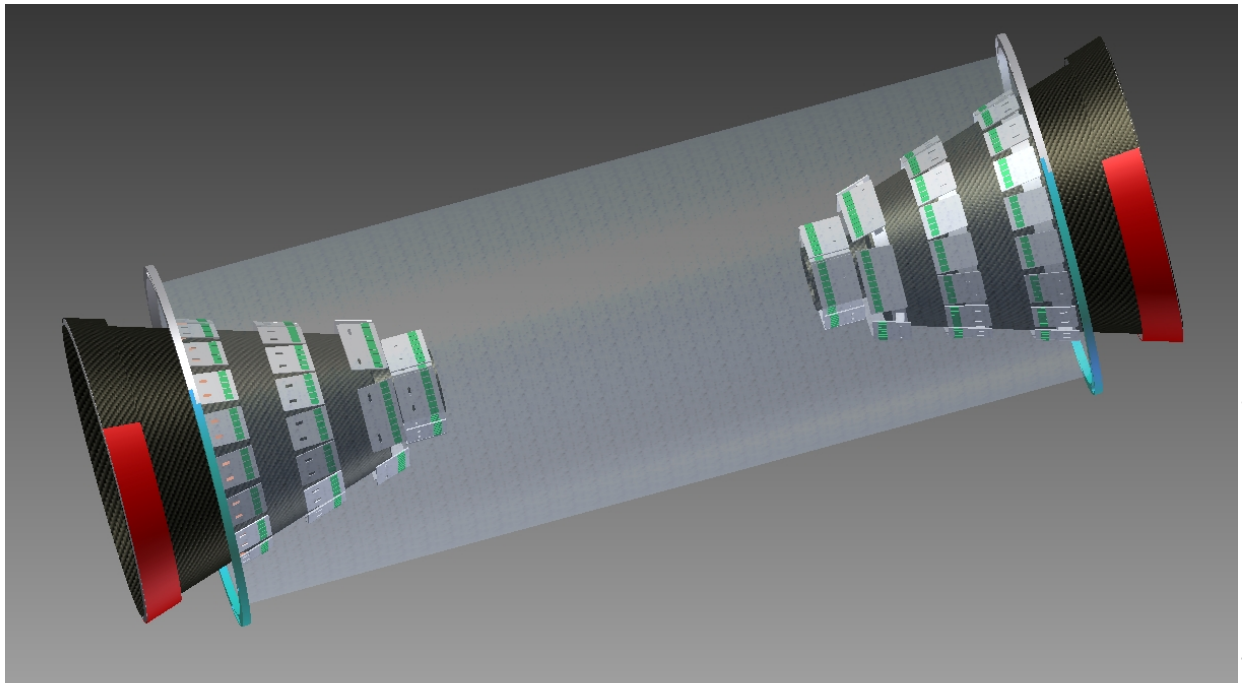

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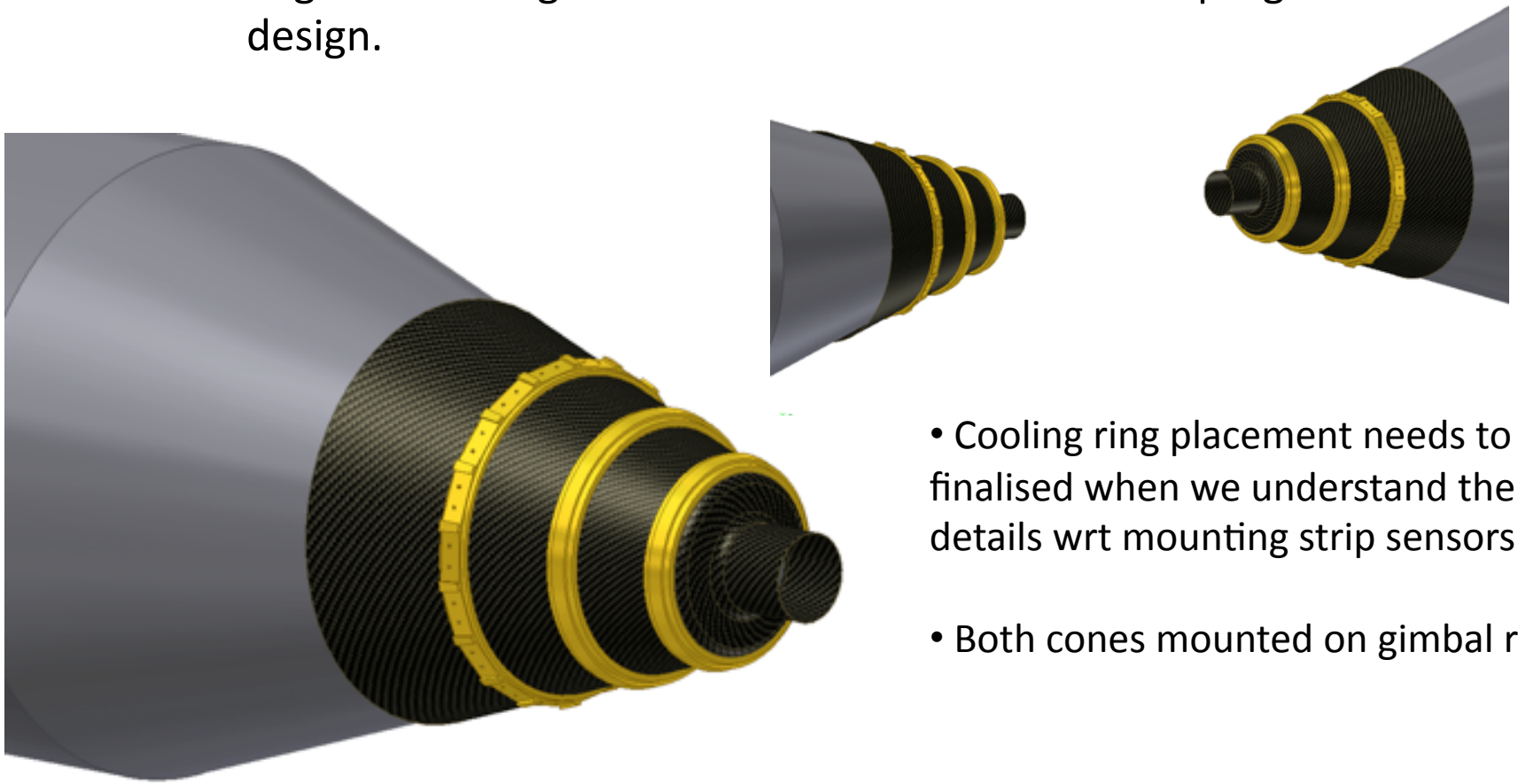

• Cooling ring placement needs to be finalised when we understand the fine details wrt mounting strip sensors.

• Both cones mounted on gimbal rings.

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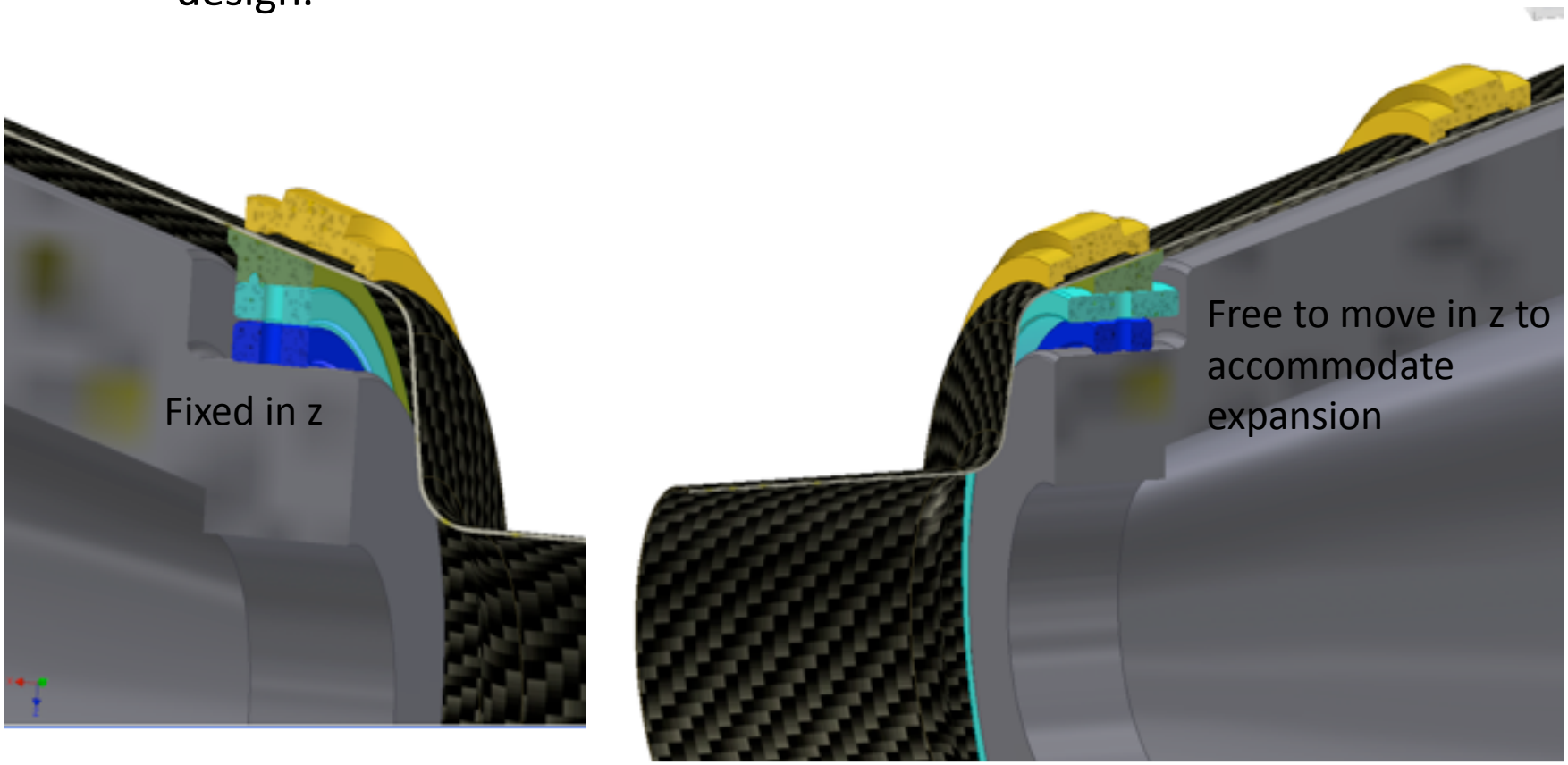


# Mechanics

- Some cooling tests are underway at QM in order to start to understand thermal and mechanical issues regarding module construction.

- Developing an understanding of thermal headroom and mechanical behaviour of thin modules.
  - Need to be especially careful given that the silicon, if heated will tend to bend, and can easily crack.
  - Extending our test facilities for modules (to run alongside existing ATLAS Tracker upgrade setup).
  - Ultimately for SuperB we assume that some variant of Filippo's web will be used for cooling pixels.

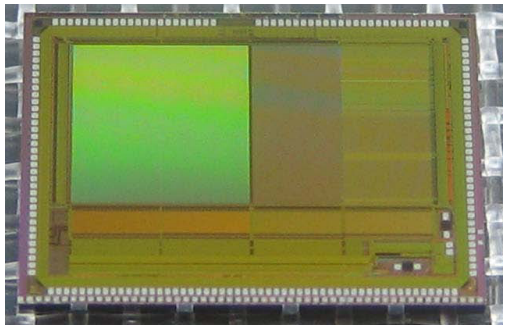
- Just ordered a set of diced thinned silicon wafers to develop thermo-mechanical modules.

Arachnid

Queen Mary University of London

# Arachnid Collaboration

- CMOS MAPS R&D programme
  - Continuation of the SPiDeR programme
  - Birmingham, Bristol, Daresbury, DESY, QMUL, RAL
  - Targeting SuperB and ALICE projects as well as generic MAPS development.
  - Focus is on
    - Evaluating the performance and radiation hardness of an INMAPS chip: Cherwell, including design features relevant for SuperB.



    - Designing a chip specific for vertexing.

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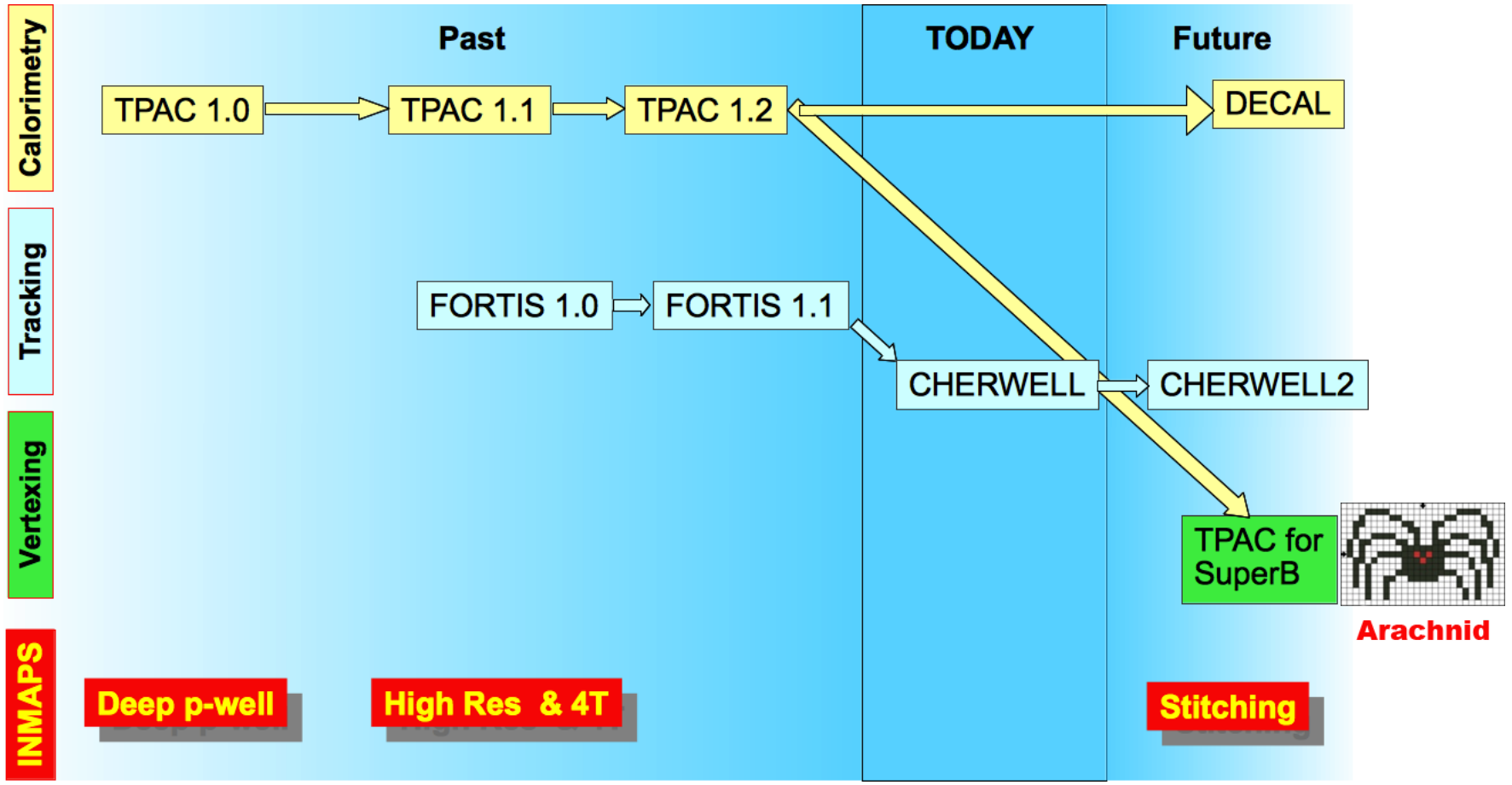
SPiDeR



# Bench tests

- Have a planned characterisation programme for the Cherwell chip.
  - FPGA programmer is currently working on firmware.

- DAQ boards and readout software exist.
  - SW may need some minor tweaks for the new chip, but expect Firmware mods. to deal with this.
  - Expect to be up and running with bench tests early in the new year: noise characterisation, $^{55}Fe$ measurements etc.
  - Planned noise and S/N measurements as a function of temperature to explore failure limits (circa 50°C based on past test-beam work).

# Test Beam / Irradiation plans

- Have submitted application for EUDET time at CERN next year to irradiate sensors.
  - Will be able to validate radiation hardness of the technology.

- Also in contact with DESY Re: test-beam campaign.

- Photon irradiation tests will be done in-house at RAL.

# Chip Design

- In January the RAL chip design team will start working on a next generation INMAPS solution for SuperB.
  - Aim to have a meeting early in the year to pin down common issues and work coherently with Valerio et al. to avoid wasting resources and forcing the experiment into a shootout over design choice.
  - Currently updating requirements for the sensor.
  - Renato will visit Italy early in the new year to start this integrated effort.
  - Alice interested in using this technology as well.

# Post-doc position available

- We (QMUL) have a post-doc position to work on pixel R&D as a part of the Arachnid programme.
  - Please see SPIRES for details:
    - http://inspirehep.net/record/1080223

    Deadline early January.

    Please talk to me (today) if you're interested, or know of someone who might be. I have to travel back to London tomorrow morning.

  - A 2nd Arachnid position should be filled at Bristol this week.