



University
of Glasgow

Glasgow Status Report

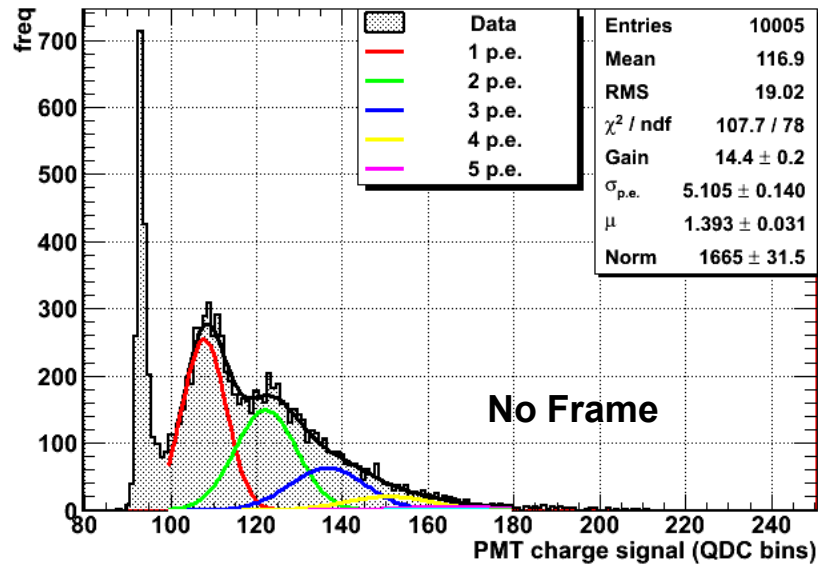
PID Session, PANDA Collaboration Meeting

08. - 12. March 2010, GSI, Germany

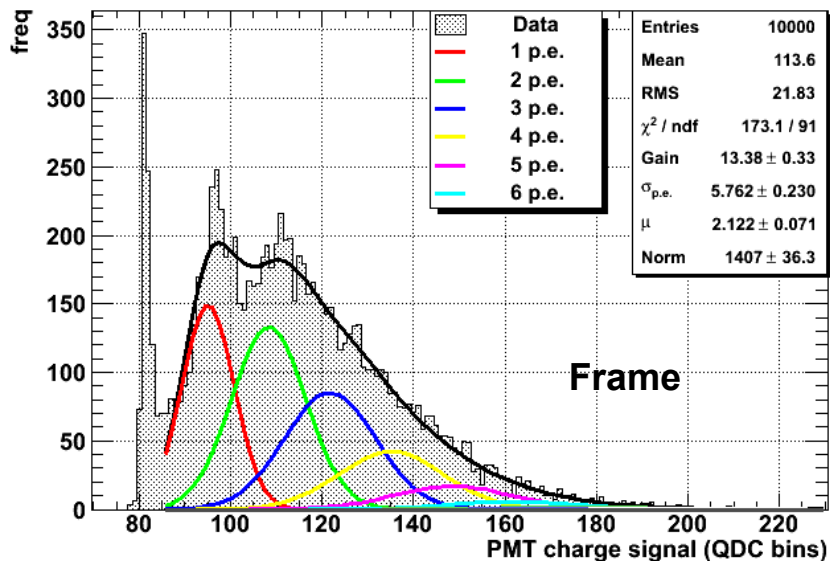
M. Hoek



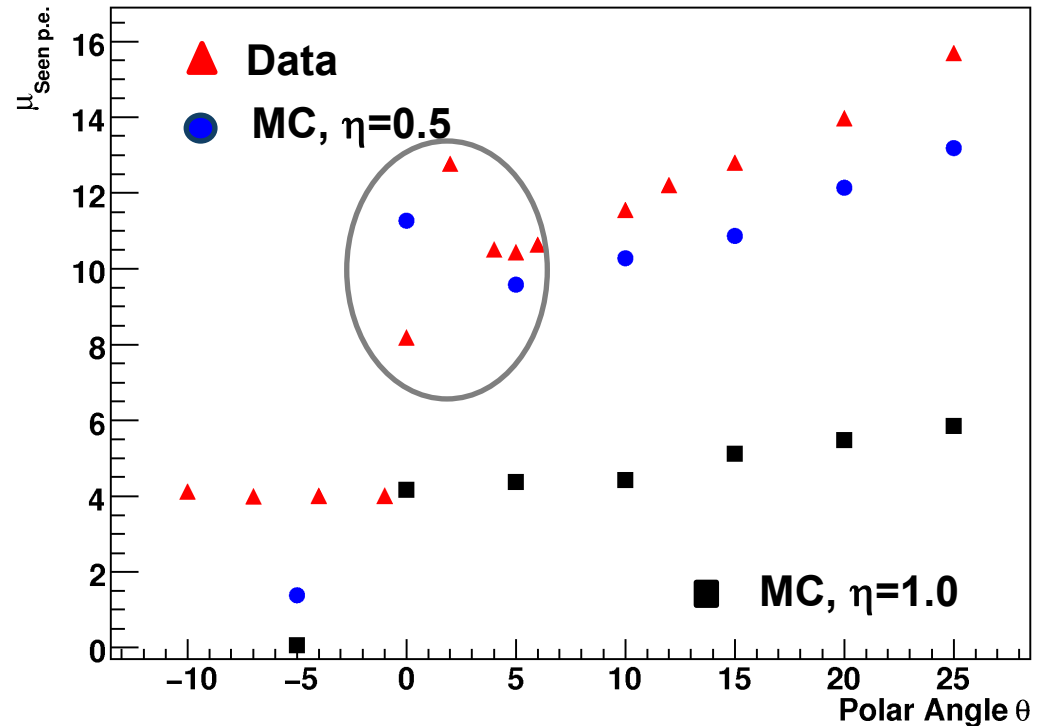
- **Test Experiment Analysis Update**
- **Dispersion Correction Evaluation**
- **Radiation Hardness Studies Update**
- **Detector Rates**
- **Focussing Lightguide Optimisation Revisited**

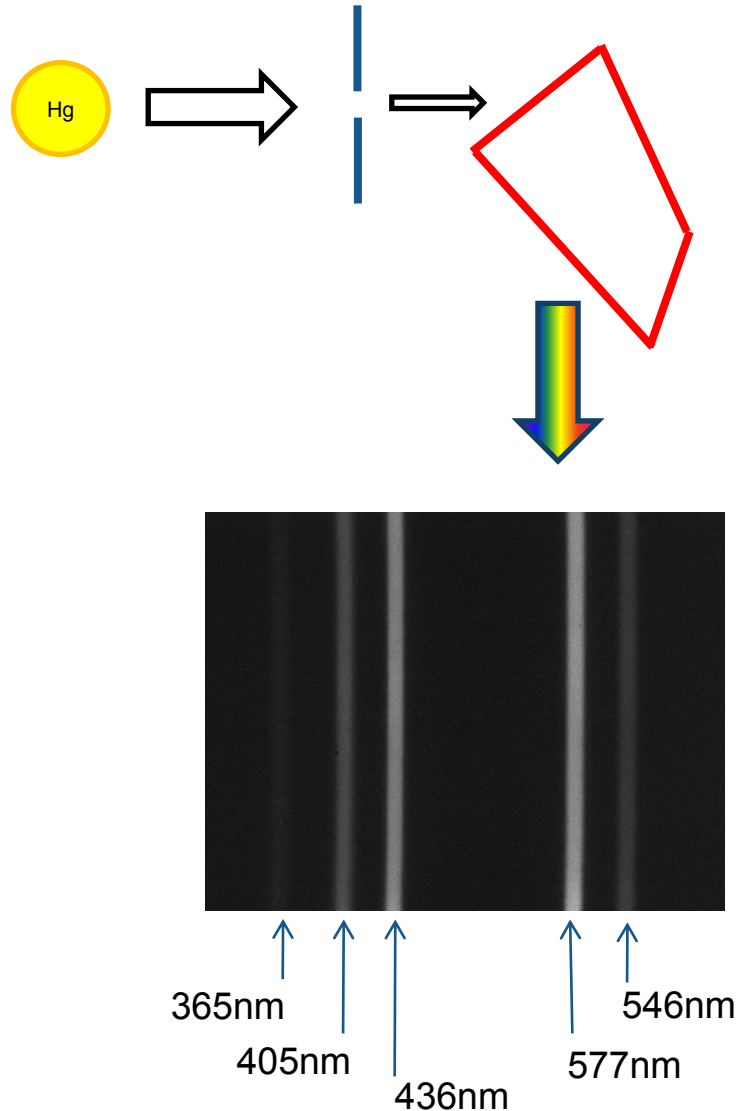


- Crosscheck of calibration
- Different voltage divider
- Systematics
 - Position of laser spot
 - PMT mounting
 - Metal frame leads to increased noise levels
- Fix PMT response parameters for further analysis



- General agreement of **data** and **simulation**
 - Follow same trend
 - Need to fix absorption
- Systematic shift of incident angle found
 - More MC studies to settle issue





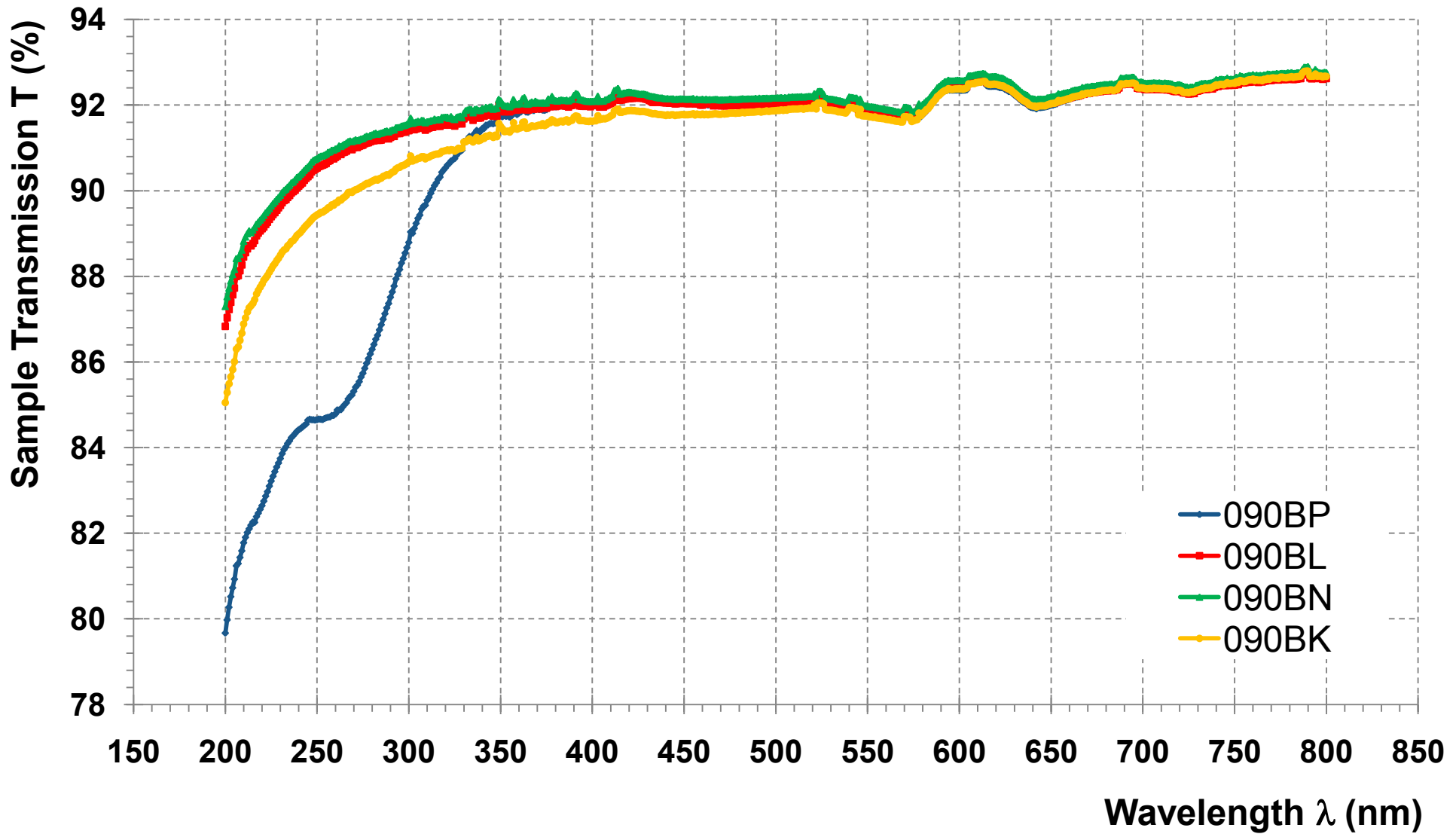
- **set up optical bench for dispersion correction evaluation**
 - Hg lamp
 - Cover most of relevant spectral range
 - **Pellin-Broca** prism
 - CCD to record beam spot
 - Pixel size $6\mu\text{m}$
 - Next steps
 - Add focussing optics
 - Study systematics

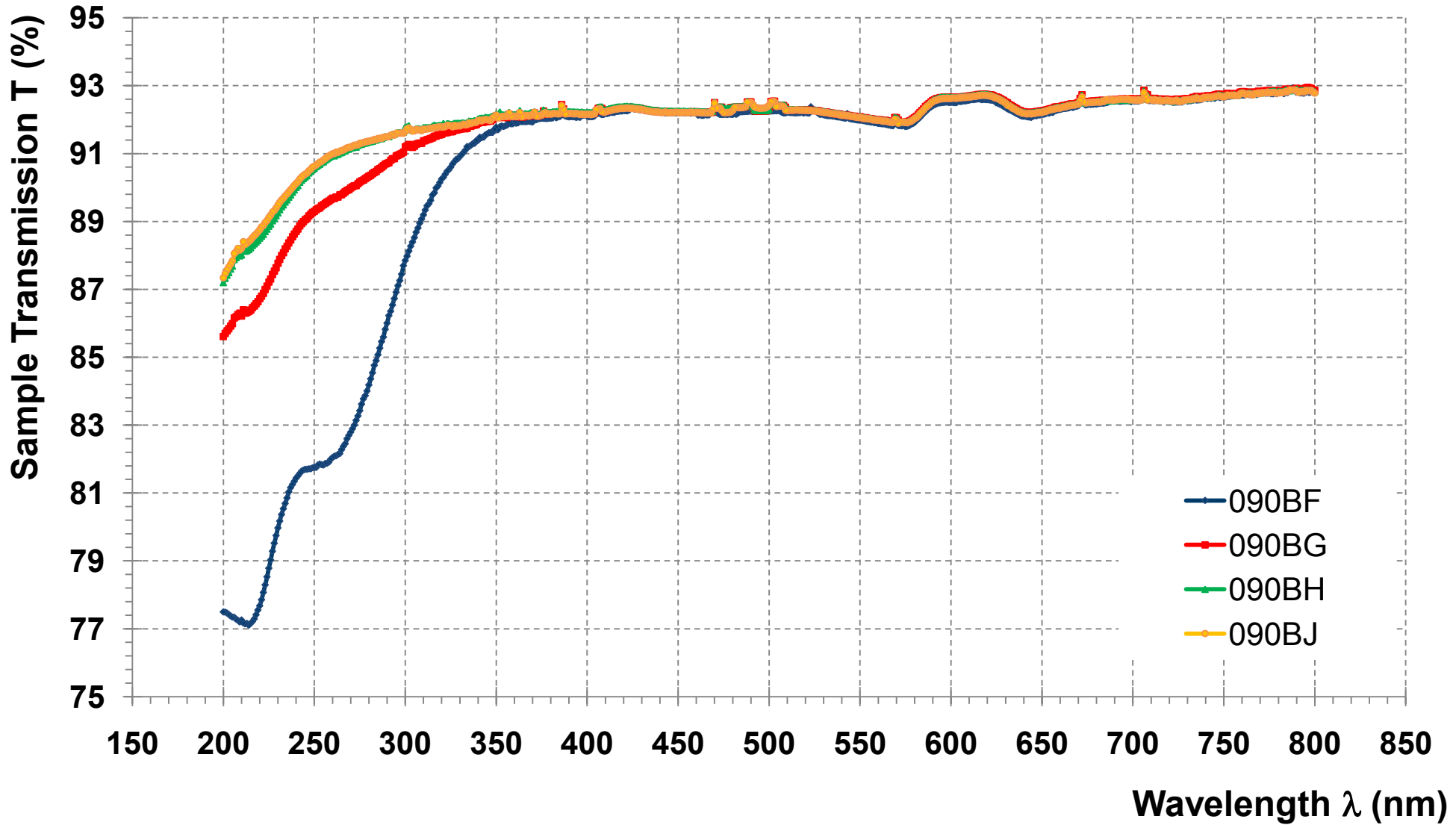
- **Investigated Samples**

- Suprasil 2A
 - 4 different H₂ levels
- Suprasil 311
 - 3 different H₂ levels
- Spectrosil 2000
- Spectrosil 2200

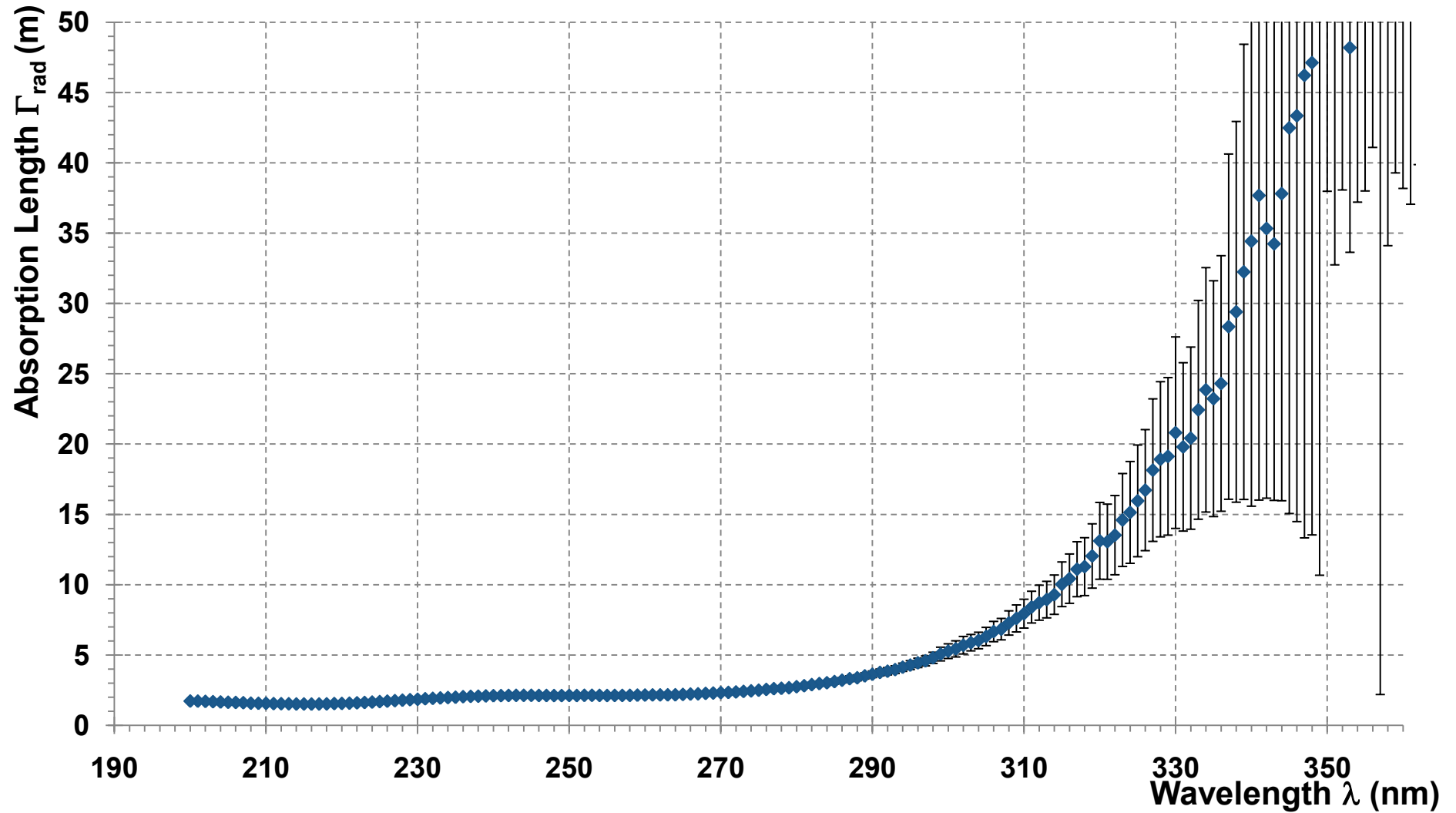
- **Irradiation**

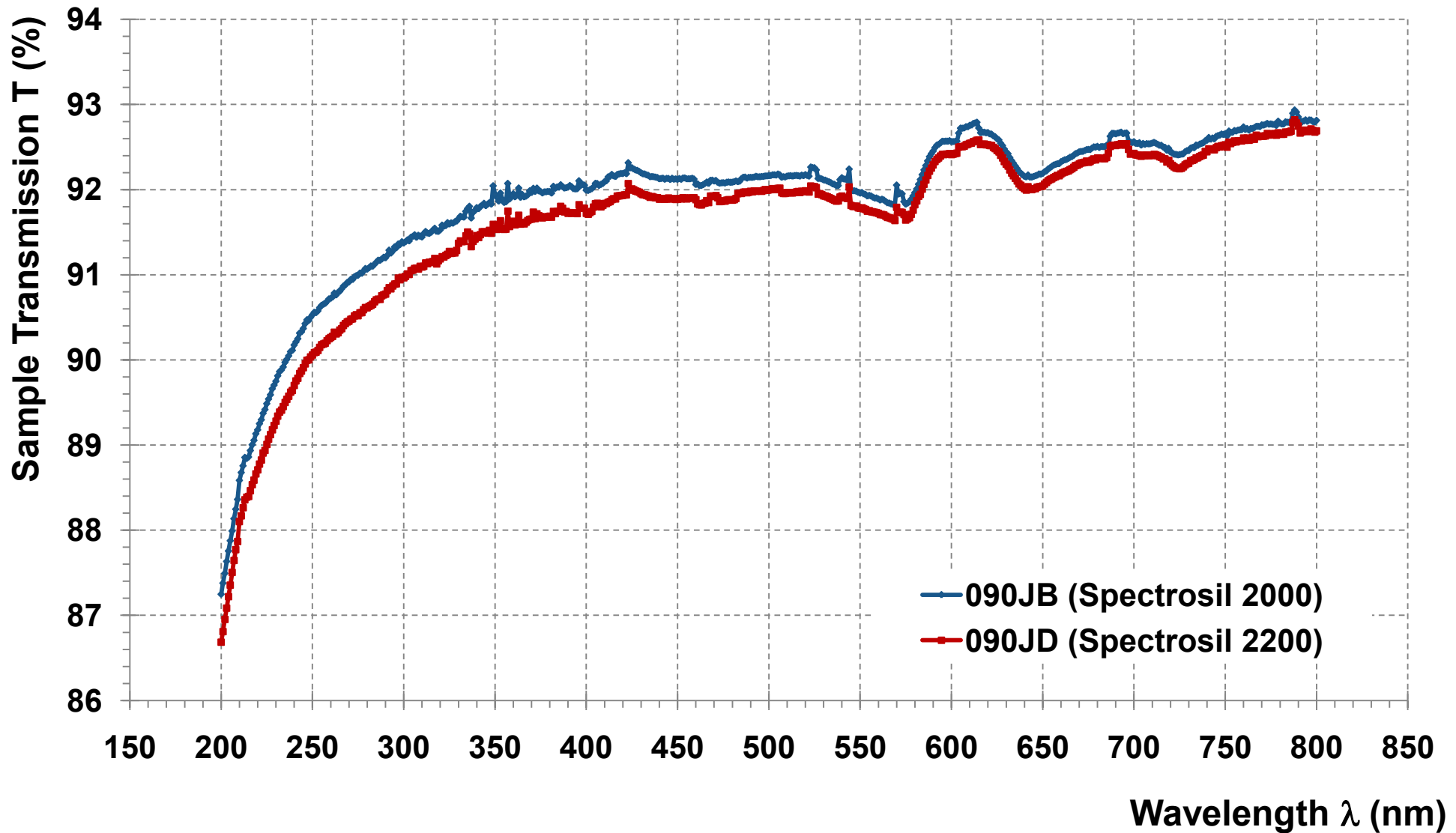
- ⁶⁰Co at Giessen
- dose 100 krad water equivalent (~4h)



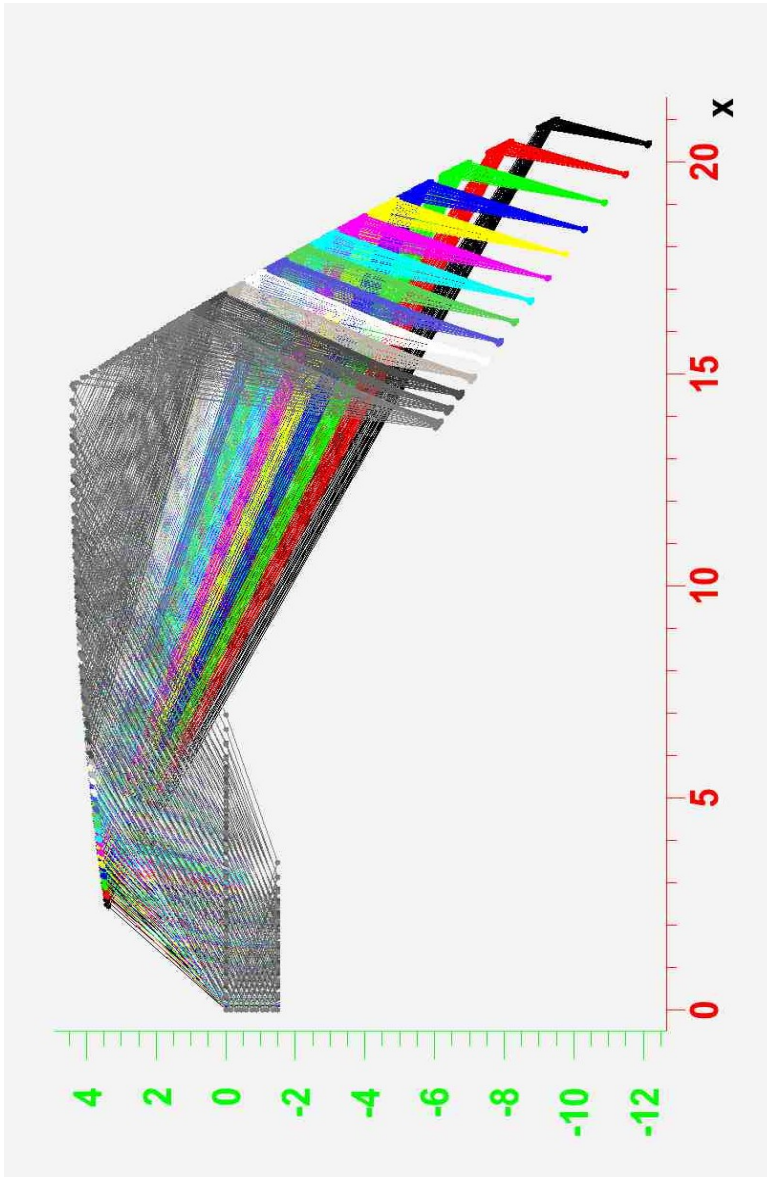


090BF Radiation Damage induced Absorption Length Γ





- **Technical Board Call on Detector Interaction Rate Limits**
 - Limiting factors for Focussing Disc DIRC
 - Photon Detector
 - MCP-PMT: 1MHz/cm²
 - Readout Electronics
 - NINO + HPTDC: 2MHz
- **Resulting Limits on Interaction Rate**
 - 17MHz for 2 charged particles
 - 7MHz for 5 charged particles
- **Need to clarify peak and average rates !**



- Single focussing surface
 - Difficult / expensive to produce
 - Optimised for Planacon MCP
- Investigate alternative lightguide shapes
 - Two spherical surfaces
 - Easier to manufacture
 - Adjust focal plane to alternative photon detectors

- **Test experiment analysis**

- ✓ PMT calibration finalised
- ✓ Data analysis finished
- MC comparison needs improvement

- **Focussing Disc DIRC Design**

- Optical bench for dispersion correction evaluation under construction
- Upgrade of prototype for next test experiment in progress

- **Radiation Hardness**

- ✓ Clear indication that H₂ plays important role

- **Lightguide Optimisation progressing**