RADSAGA
ESR 1-2-3 Update Meeting

Christoph Meyer (ESR 3)

ESR 3

- Radiation environment description at an energy deposition level
- Host institutes: KVI-CART (Groningen) + Pius Hospital Oldenburg

Project

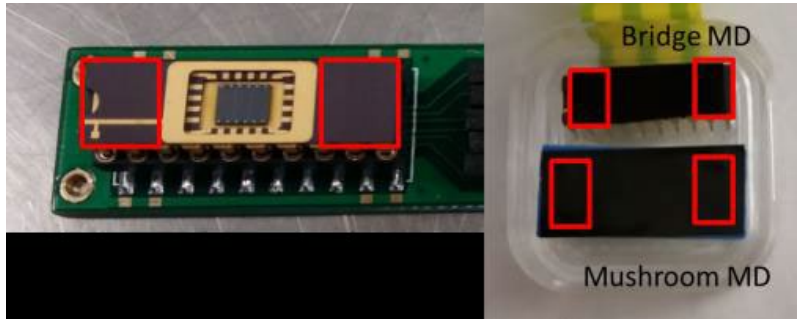
- Measurement and simulation of LET distributions

- **Original objectives in RADSAGA project:**
  - Development of a tool correlating SEE rates in test conditions to those in operational conditions

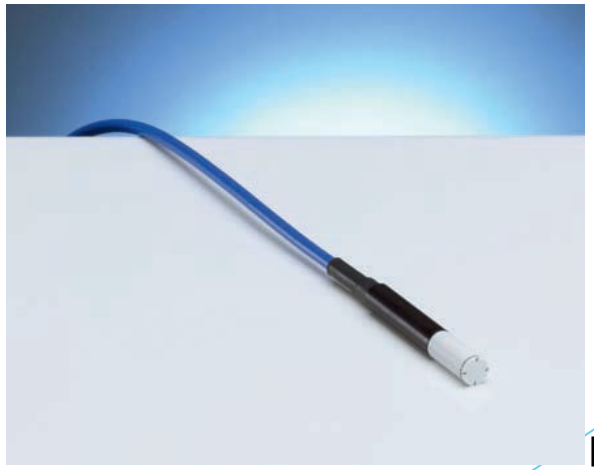
- **Objectives at Pius hospital:**
  - Improve patient dosimetry by measuring LET distributions in clinical beams
  - Consideration of LET variation in treatment planning

Measurement equipment

- **Measurement of LET distributions:**
  - Silicon detector:
    - 3D Mushroom detector (CMRP)
    - d = 10 µm
  - Diamond detector:
    - PTW microDiamond
    - d = 1 µm

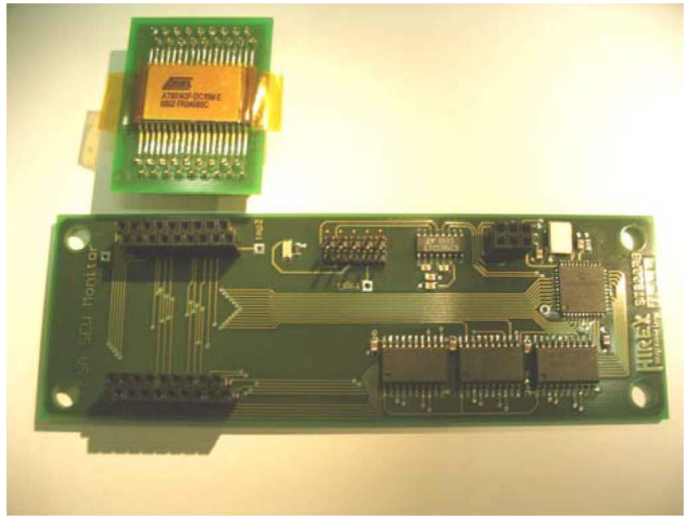


[1]


[2]

Measurement equipment

- **Measurement of SEU: ESA SEU monitor**
  - Reference monitor for SEU measurements
  - 250 nm technology
  - 4 Mbit SRAM



[3]

Proposed experiments

- **Measurement of LET distributions:**
  - Determination of applicability of Mushroom and microDiamond detector
  - Measurement in proton and heavy ion beam in air (and later vacuum)

- **Measurement of SEEs:**
  - Special attention paid to sub-LET-threshold SEEs
  - Measurement with thin foil in front of detector

Open discussion

Bibliography

[1] Anatoly B. Rosenfeld. “Novel Detectors for Silicon Based Microdosimetry, Their Concepts and Applications”. In: Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment. Advances in Detectors and Applications for Medicine 809 (Feb. 11, 2016), pp. 156–170

[2] CMRP, CMRP MicroPlusProbe and MicrodosimetrySuite User Guide, Manual

[3] PTW Freiburg, MicroDiamond Detector, Brochure, accessed: 03.03.2020