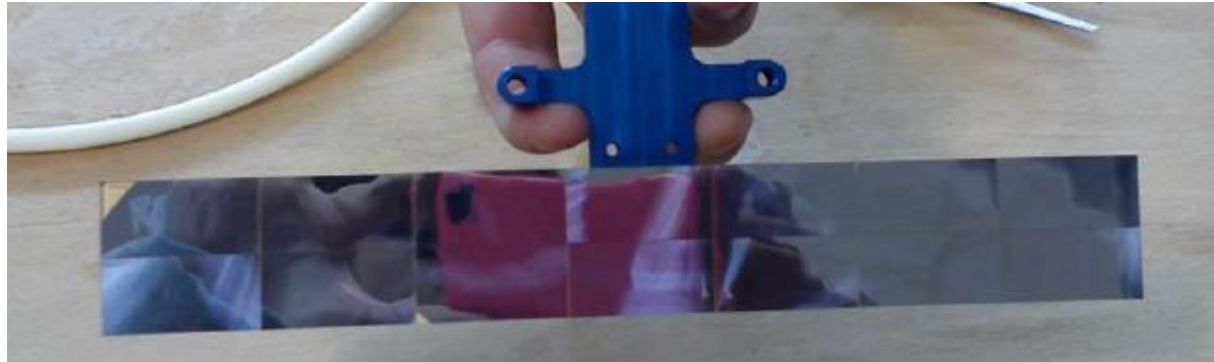
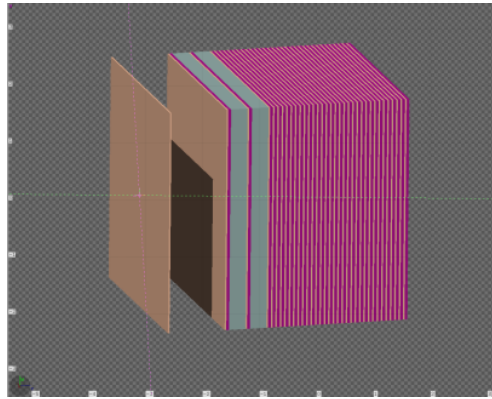


CLINICAL PROTOTYPE OF A PROTON CT BASED ON A TRACKING CALORIMETER



Work packages

WP1: Physics simulation, verification and design optimization

- Beam scenarios – beam spot, intensity
- Detector specifications: Optimization of geometry and segmentation
- Radiation environment - location
- Evaluation of rates (average/worst case) of the digital backend of the sensor
- Beam tests of sensors

WP2: Chip submission and sensor characterization

- Improved sensor and data encoding design
- Chip submission
- Testing of prototypes

WP3: Data readout

- Optimisation of the readout electronics architecture
- SystemC simulation of rates (average/worst case) of the readout chain
- Development and testing of readout electronics
- Setting up a full readout chain
- Development of firmware and software

WP4: Online systems

- Hardware infrastructure
- Software infrastructure
- DAQ software
- DCS + Trigger
- Data quality monitoring

WP5: Assembly and System integration

- Assembly of chips into HICs/staves
- Assembly of staves into layers
- Integration of layers into a compact detector
- Mechanical and electrical integration, cooling
- Electronics and DAQ integration

WP6: Commissioning

- Commissioning of the PRM in beams
- Performance evaluation in a pre-clinical environment, i.e. with phantoms

WP7: Reconstruction software

- Calorimeter response
- Calorimeter track reconstruction
- Reconstruction of 3D trajectory – track vector matching
- 3D stopping power map

Organisation

Project management

- NN (Postdoc I UiB)

SW infrastructure

- Boris

WP1: Physics simulation and design optimization

- Ilker
 - Helge
 - Jarle (PhD student I HiB)
 - NN (PhD student I UiB)

WP2: Chip submission and sensor characterization

- Pedro/Walter/Luciano/Dieter
 - NN (PhD student II UiB)

WP3: Data readout

- Johan, Kjetil
 - Attiq
 - Eivind
 - Shiming
 - NN (PhD student I UiB)
 - master students (2 HiB + 2 UiB)

WP4: Online systems

- Postdoc I, Boris
 - Matthias
 - NN?

WP5: Assembly and System integration

- Postdoc, Dieter, Thomas (Utrecht)
 - Georgi
 - Helge R.
 - NN (PhD student II HiB)
 - NN (PhD student II UiB)

WP6: Commissioning

- Postdoc II (UiB)

WP7: Reconstruction software

- Postdoc I
 - Boris
 - Matthias
 - NN (Renate + PhD?)
 - Helge
 - Ilker

BUDGET

UiB

- **Procurement of R&D services (1800 kNOK):**
 - **Beam tests: 300 kNOK**
 - **System integration tasks: 900 kNOK**
 - **Software services: 600 kNOK**
- **Consumables (9200 kNOK)**
 - **Sensor chip submission: 2000 kNOK**
 - **Sensor chip production (about 2400, depending on final size): 1400 kNOK**
 - **Staves and layers: 2800 kNOK**
 - **Assembly and integration: 320 kNOK**
 - **Readout: 650 kNOK**
 - **DAQ: 810 kNOK**
 - **Power: 730 kNOK**
 - **Cooling: 490 kNOK**

HiB

- **Procurement of R&D services: 1018 kNOK**
- **Equipment: 2000 kNOK**