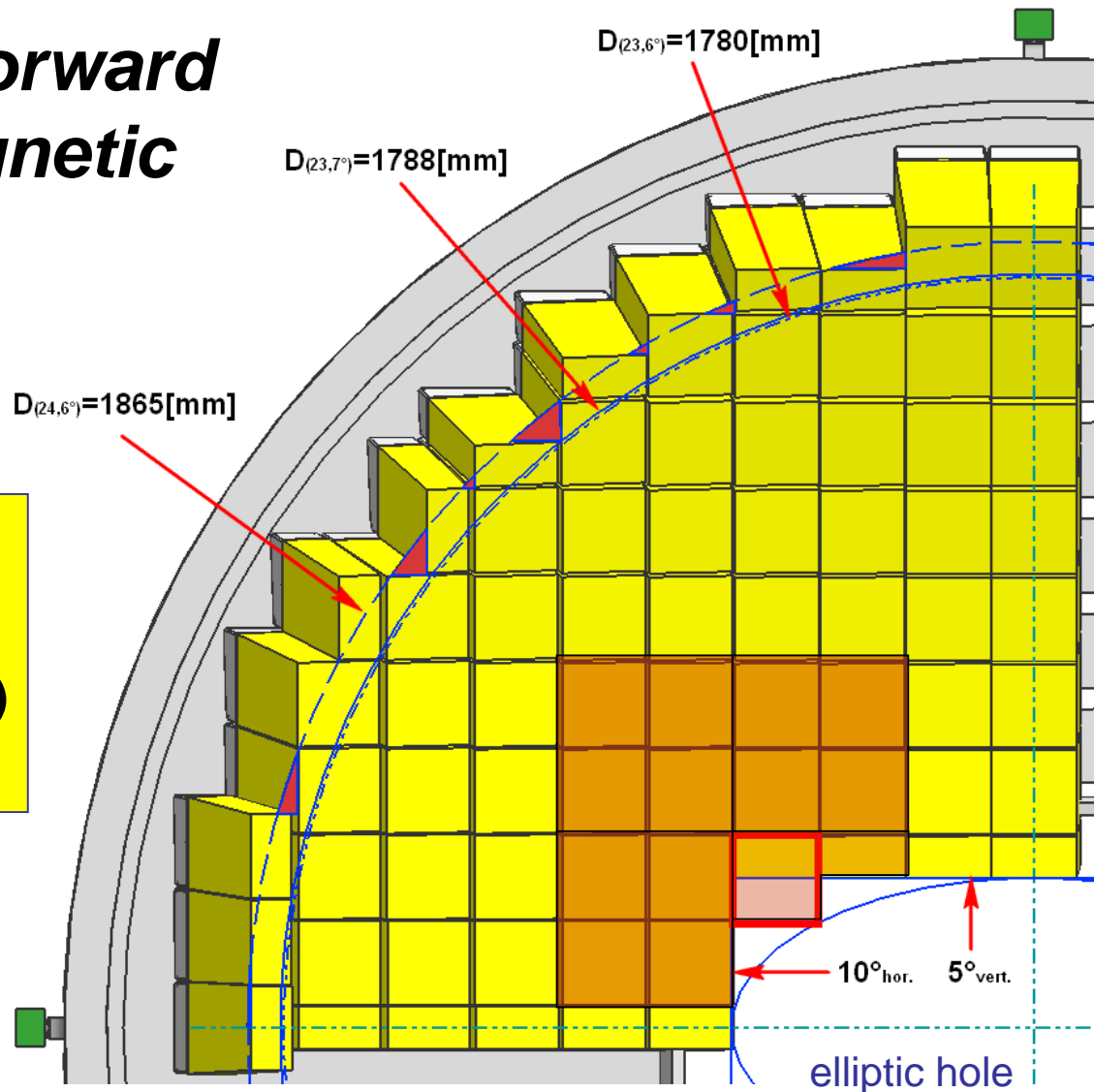


PROTO192

Prototype for the forward endcap electromagnetic calorimeter

Basic design

- 4 subunits VPTT (RIE)
- 4 subunits VPT (Hamamatsu)
- 4 subunits LAAPD



Goals of PROTO192

- Determine at test beam and compare with MC
 - energy resolution
 - spatial resolution
- Test of
 - cooling concept
 - light coupling
 - VPT, VPTT and LAAPD (comparison)
 - preamplifier, digitization
 - noise performance
 - HV and LV distribution, cabling
 - monitoring systems
- Long term performance, stability
- Check mounting sequence
 - Check maintenance and service concept

Mechanics 4x4 Subunits (VPT/VPTT)

Alveoles: **ok** (KVI)

Crystals: **ok**

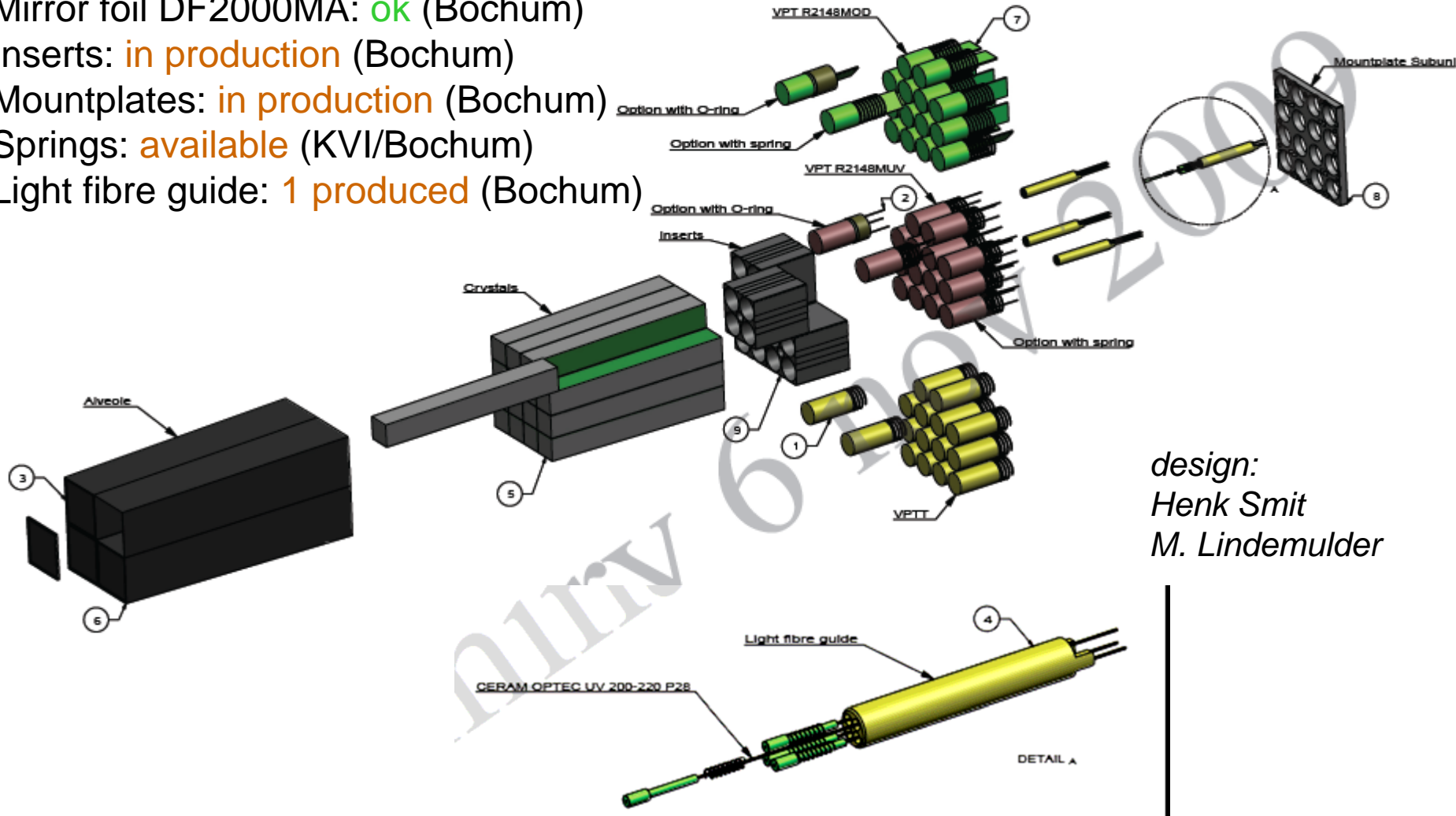
Mirror foil DF2000MA: **ok** (Bochum)

Inserts: **in production** (Bochum)

Mountplates: **in production** (Bochum)

Springs: **available** (KVI/Bochum)

Light fibre guide: **1 produced** (Bochum)



design:
Henk Smit
M. Lindemulder

Mechanics of subunits for LAAPD

- LAAPD (Basel/Uppsala) and ASICs (Bochum) ordered
- Design of inserts/mountplates **not yet started**
- Strategy
 - wait for results of mechanical design and ASIC board tests for barrel
 - concentrate on VPT/VPTT first

Mechanics

- Interfaces (to backplate): to be **produced** (KVI)
- Backplate and cooling circuit: **design in progress** (KVI/Bochum)
- Casing and support of backplate: **to be designed** (Bochum)
 - “vacuum tight”
 - options for different types of front cooling
 - feed through of cables (PCB) and fibres
- Design of moving table (Bonn)

Cooling

- Chiller, pressure and temperature sensors: **available** (Bochum)
- Test setup to measure cooling fluid flow and cooling power: in progress (Bochum)
- Nitrogen cooling: **to be designed** (KVI/Bochum)
- Insulation material: **available** (Bochum)
 - try different versions of front cooling
 - **to be designed and built**
- Isolation of cooling supply lines: **to be designed**

Electronics (see also Tom's talk)

- 50 VPTT from RIE **available** (Bochum)
- VPT from Hamamatsu
 - 10 prototypes available (Uppsala)
 - **more to be ordered**
- LAAPDs ordered (Basel/Uppsala)
- Preamplifier/HV-filter design (Basel)
 - prototypes available
 - **foldable version to be designed**
- ASICs ordered (Bochum)
 - PCB etc. to be designed (?)
- Shaper: **to be designed** (Basel)
- HV, LV, signal cables: **coax or flat cables?**
- **Grounding scheme?**
- **Shielding of crystals, photodetectors and preamps?**
- 64 channels SADCs from Uppsala available
 - others?
- LV for preamplifiers: **available** (Bochum)
- HV: **available** (Basel)

Light Monitoring

- LED-pulser: ok (Bochum)
 - Pulse form like PWO signal
 - Different colors (blue, green, red)
 - High light output
 - Intensity variation in a wide range (1:1000)
 - Small dimensions
- Fibers (Ceramoptec, 200 μm): available
- Reference system: to be designed

Temperature and Humidity Monitoring

- THMP **designed**, readout with EPICS: ok (Bochum)
- Already in use for readout during radiation tests
- Documentation:

<http://panda-wiki.gsi.de/cgi-bin/view/EMC/THMP>

- Flat cables: **ok** (Bochum)
- Humidity sensors: **ok** (Bochum)
- Temperature sensors: **in design** (Warsaw/Bochum)

