



Unit for Energy Efficient Building

Institute for Construction and Material Sciences, Faculty for Technical Sciences

Mission Statement – Study programs - Research profile – Labs

Unit for Energy Efficient Building

(<https://www.uibk.ac.at/bauphysik/>)

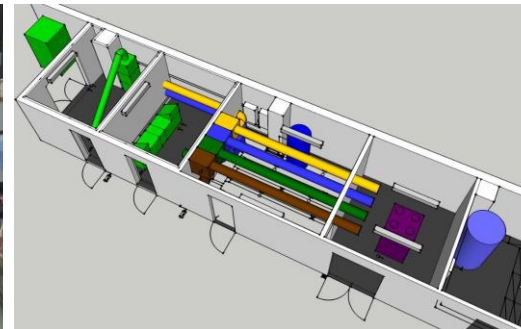
Team

- Head of department: Univ.-Prof. DI Dr. techn. Wolfgang Streicher
- Employees: 34 (Professors, Postdocs, PhDs, Students, Admin staff)



Research and Development

- Participation and Management of national and international research projects (approx. 50 projects in the last 15 years, allocation of ~ 1 Mio. third-party funding per year)
- Extensive laboratory infrastructure as well as software and hardware resources



Unit for Energy Efficient Building

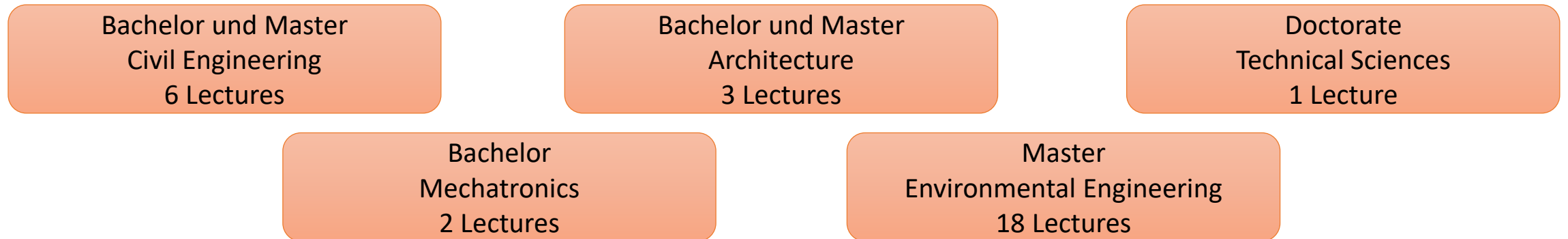
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Teaching

- The Energy Efficient Building department covers education in the field of **building physics, thermodynamics, energy efficient buildings, building services engineering** and **renewable energy** several fields of study



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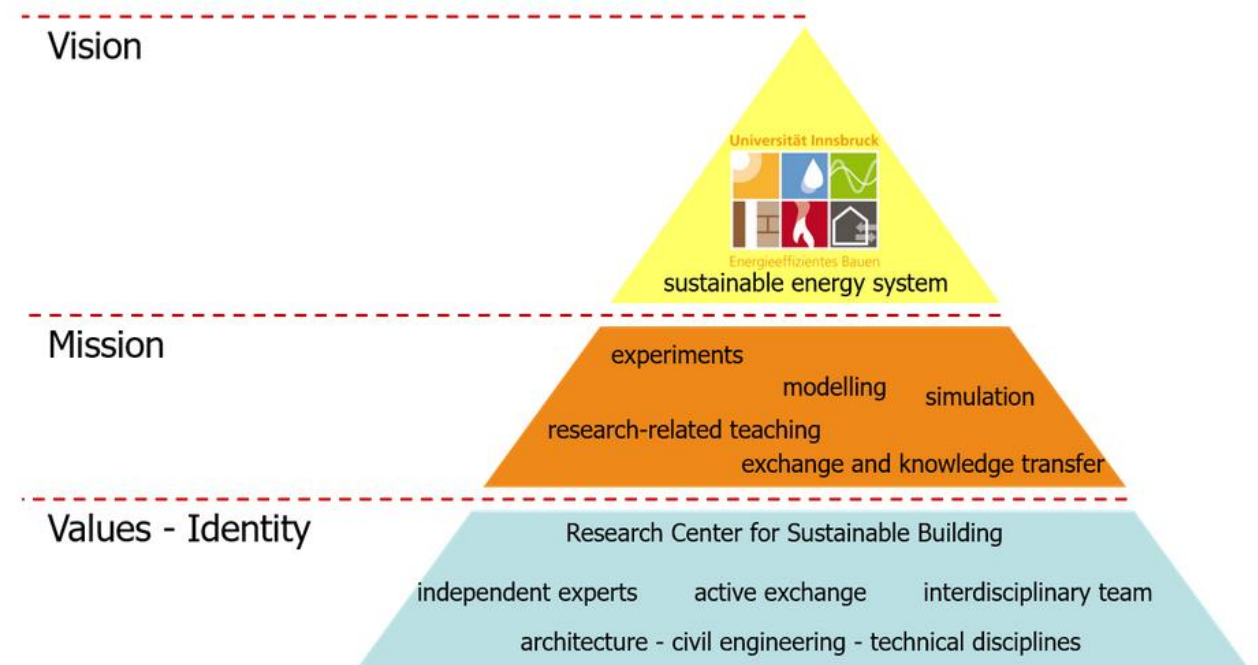
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The unit for “Energy Efficient Building” provides scientific research on new and retrofit construction and its energy supply.

The emphasis is on

- Integrative sustainable building design
- HVAC and other building services
- Renewable energy use in buildings
- Optimizing the complete system
- Consulting Policy and Stakeholders

Pyramid of success



EEB Daylighting group



Assoz. Prof. Dr. Rainer Pfluger

Special fields:
Building Physics, Daylight,
Ventilation, Passive house,...



Andreas Frei

Special fields:
Coding, Data acquisition,
LivingLab



DI Dr. Martin Hauer

Special fields:
Energy & Daylight simulation,
Measurements & LivingLab
partly @Bartenbach



Dr. Sascha Hammes, MSc

Special fields:
Integral controls, user-
centered systems, data
processing- and analysis



Josef Miller, MSc

Special fields:
BIM2BEM, Coding

Yoga ☺



DI Dr. David Geisler-Moroder

Special fields:
Daylight simulation, BSDF,
controls, Radiance expert



Mag. Daniel Plörer

Special fields:
Integral controls (ILM),
daylight sim- & measurement,
partly @HSLU



Vincent van Karsbergen, MSc

Special fields:
Integral controls, Coding

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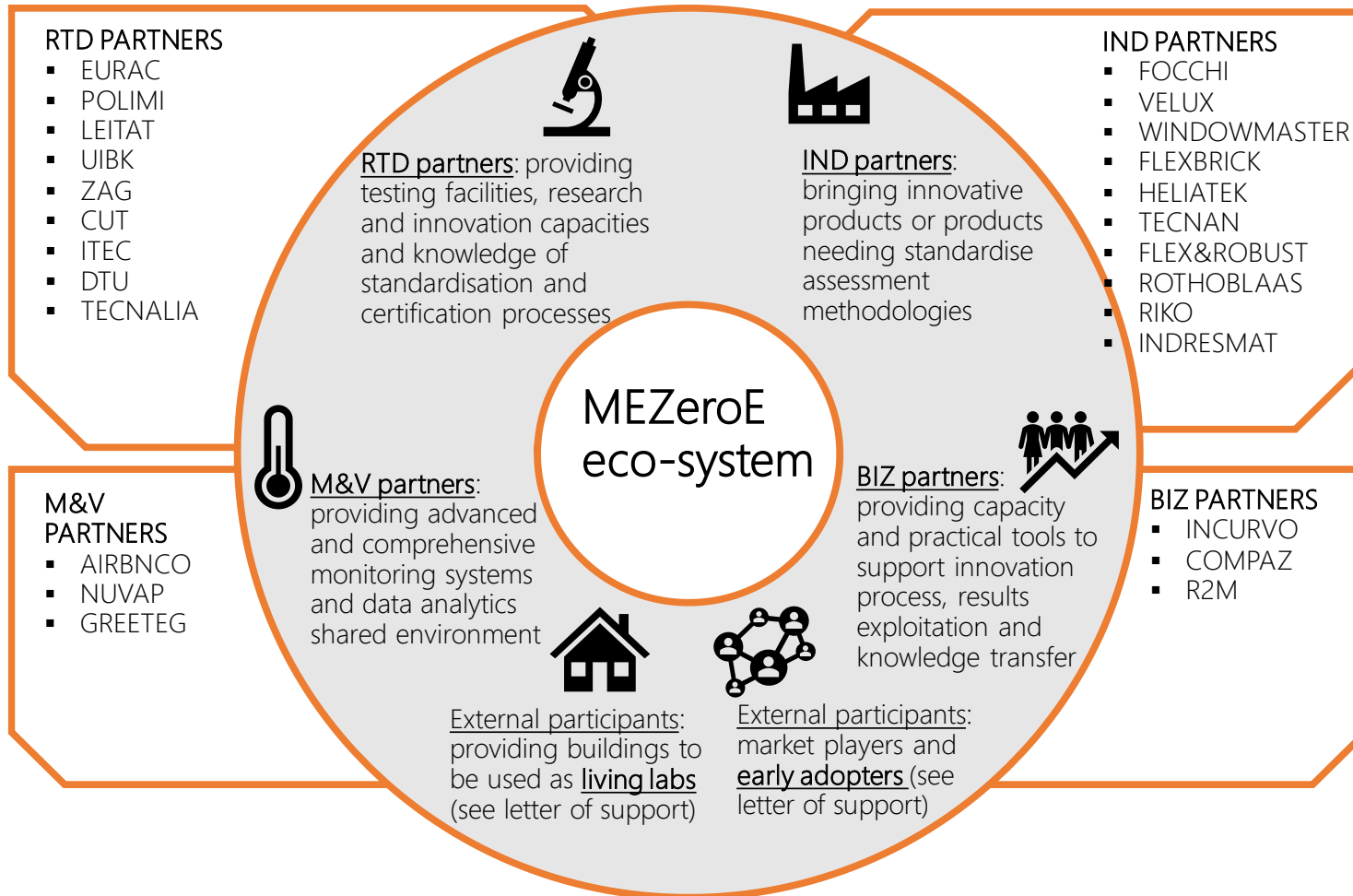
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Research projects on daylighting and artificial lighting, facade and BIM (closed and ongoing...)

Systems	Simulation	LichtAusFassade	Optimized daylight and artificial light supply via facades
		PO1	Integral daylight and artificial light control
		lightSIMheat	Coupled energy and daylight simulation for complex facade systems
		DALEC	Daylight and Energy Calculator
		VisErgyControl	Integral daylight and artificial light control for maximum melanopic comfort and primary energy efficiency
	BIM	FFF-Talisys	Daylight systems with freeform surfaces
		FACEcamp	Competence center to support the development of modern facade systems
		MEZeroE	Measuring Envelope products and systems contributing to next generation of healthy nearly Zero Energy buildings
		BIM2IndiLight	BIM-supported lighting design and control for workplace-related individual supply of daylight and artificial light
		BIM2BEM-Flow	Building Information Modelling to Building Energy Modelling
Control	TwinLight	BIM-based implementation of daylight and artificial lighting controls	
	see-it	Camera-based, user-centered daylight control system for optimal working environments	

MEZeroE - Measuring Envelope systems for Zero Energy buildings

<https://www.mezeroe.eu/>



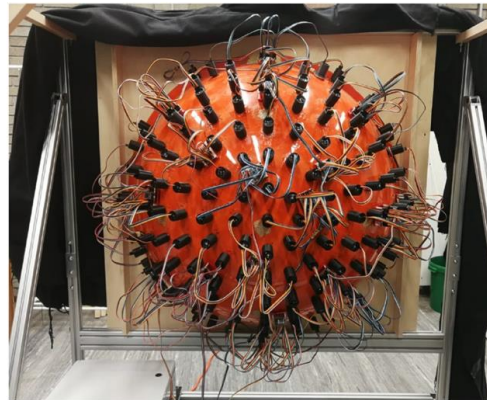
PM&VL8: Product measurement & verification line

Solar gain control in semi-transparent envelope components

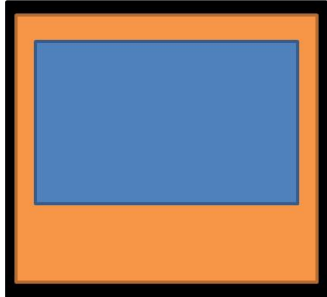
In-situ g-value:
Component scale



Goniophotometer:
Component scale



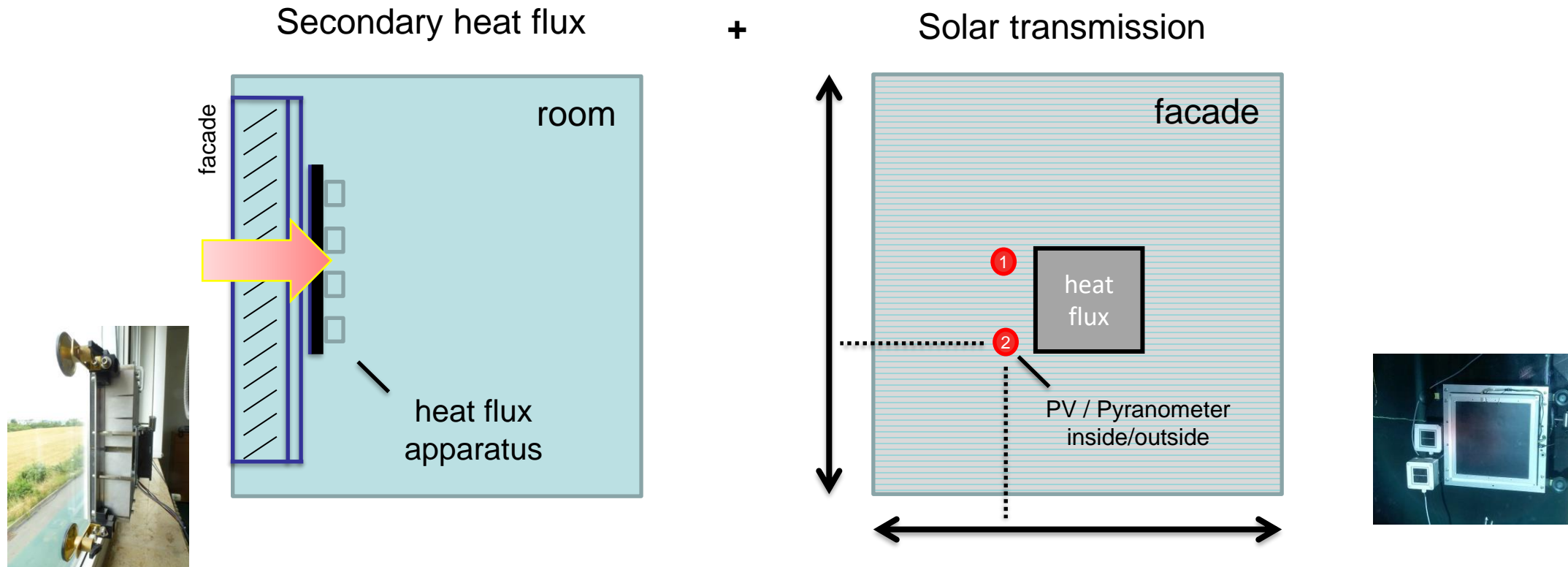
PASSYS:
Facade scale



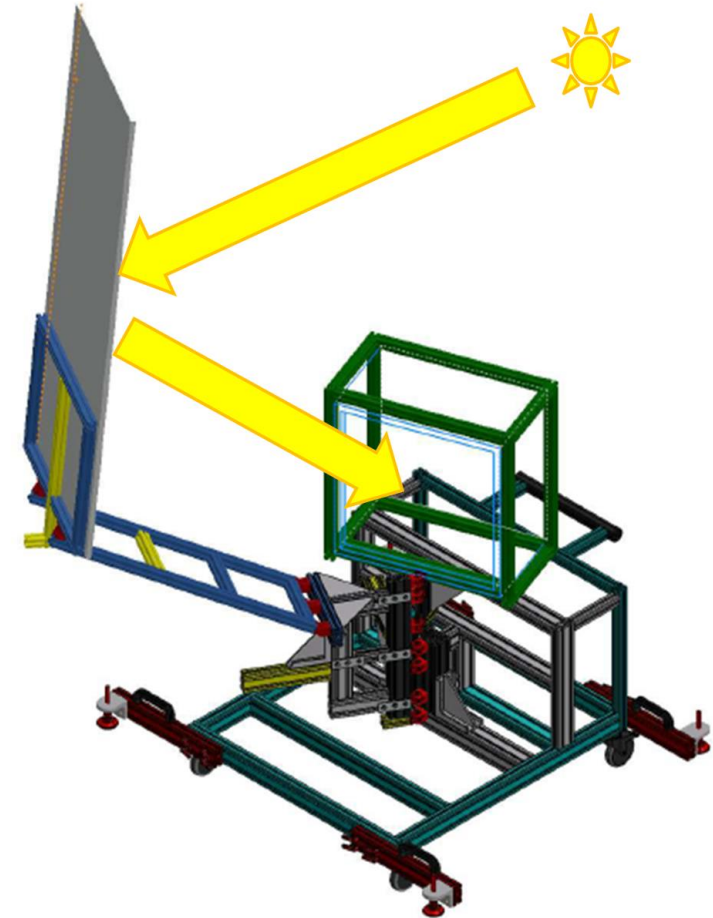
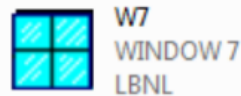
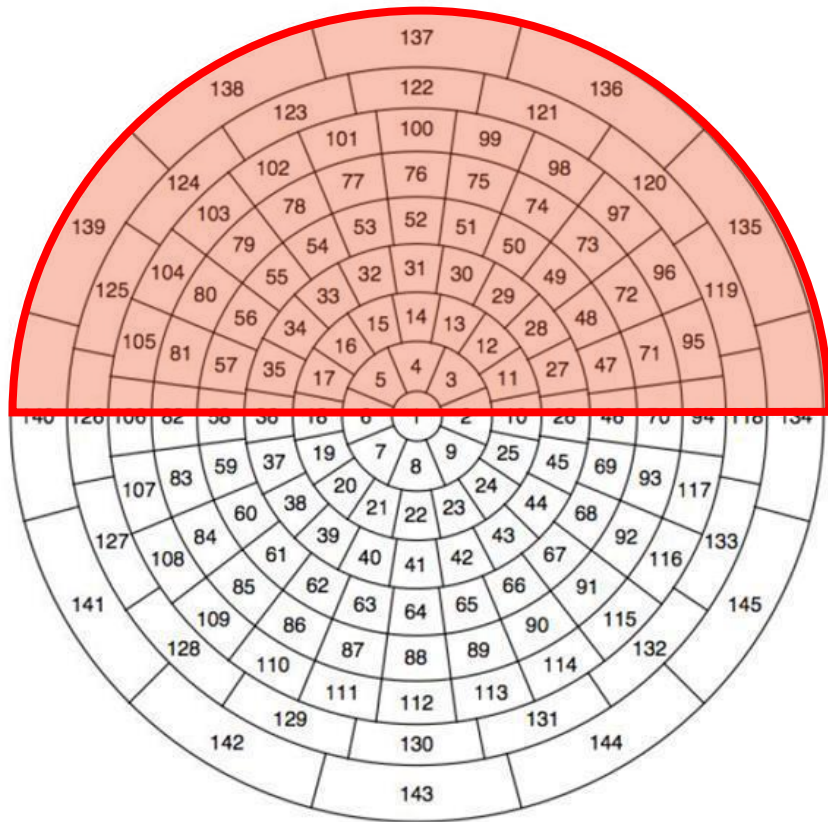
Lab infrastructure development in the course of H2020 MEZeroE – www.mezeroe.eu

Novel concept of a in-situ g-value apparatus

- Measurement of **transmitted solar radiation** by means of calibrated PV cell / Pyranometer
- Measurement of the **absorbed heat quantity** (secondary heat flux) by means of a temperature-controlled plate apparatus



Extension to 2D g-value measuring device for measurements with KLEMS resolution on the incident quarter hemisphere



Extension to a 2D g-value measuring device

Pivoting planar solar mirror

Work in progress

3-joint tracking



„I want to become the first SHGC-rover in the world“ :-D

Peltier-cooled climatic box with integrated in-situ measuring device (180° horizontal moveable)

got inspired by...



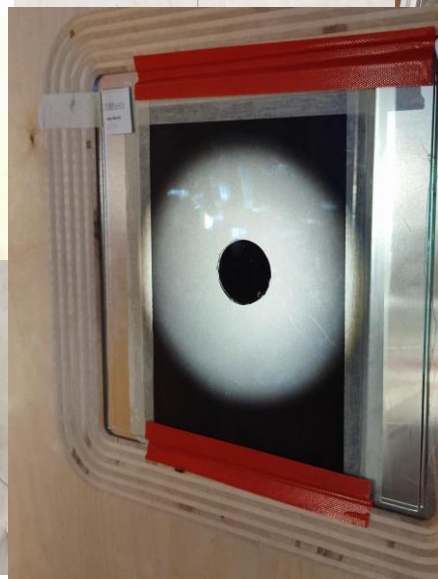
Control unit

Sphere Goniophotometer

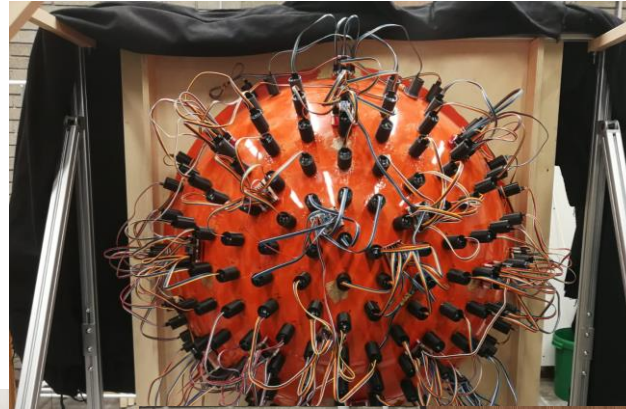
Construction of a first prototype



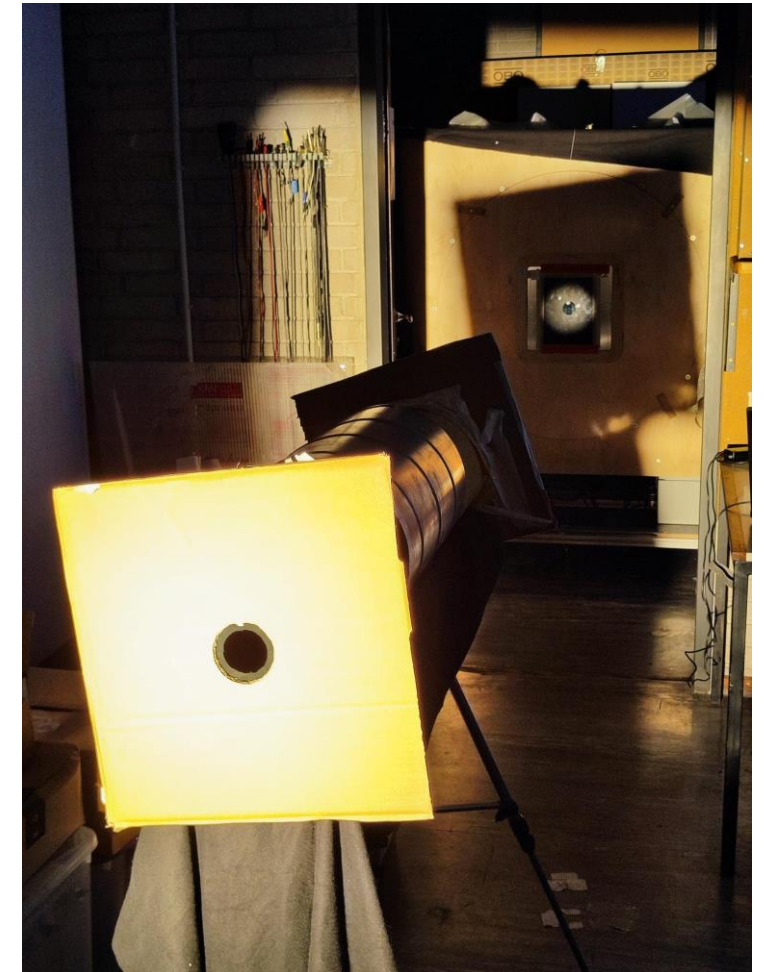
Measurement globe



Probe
placeholder



Artificial light source

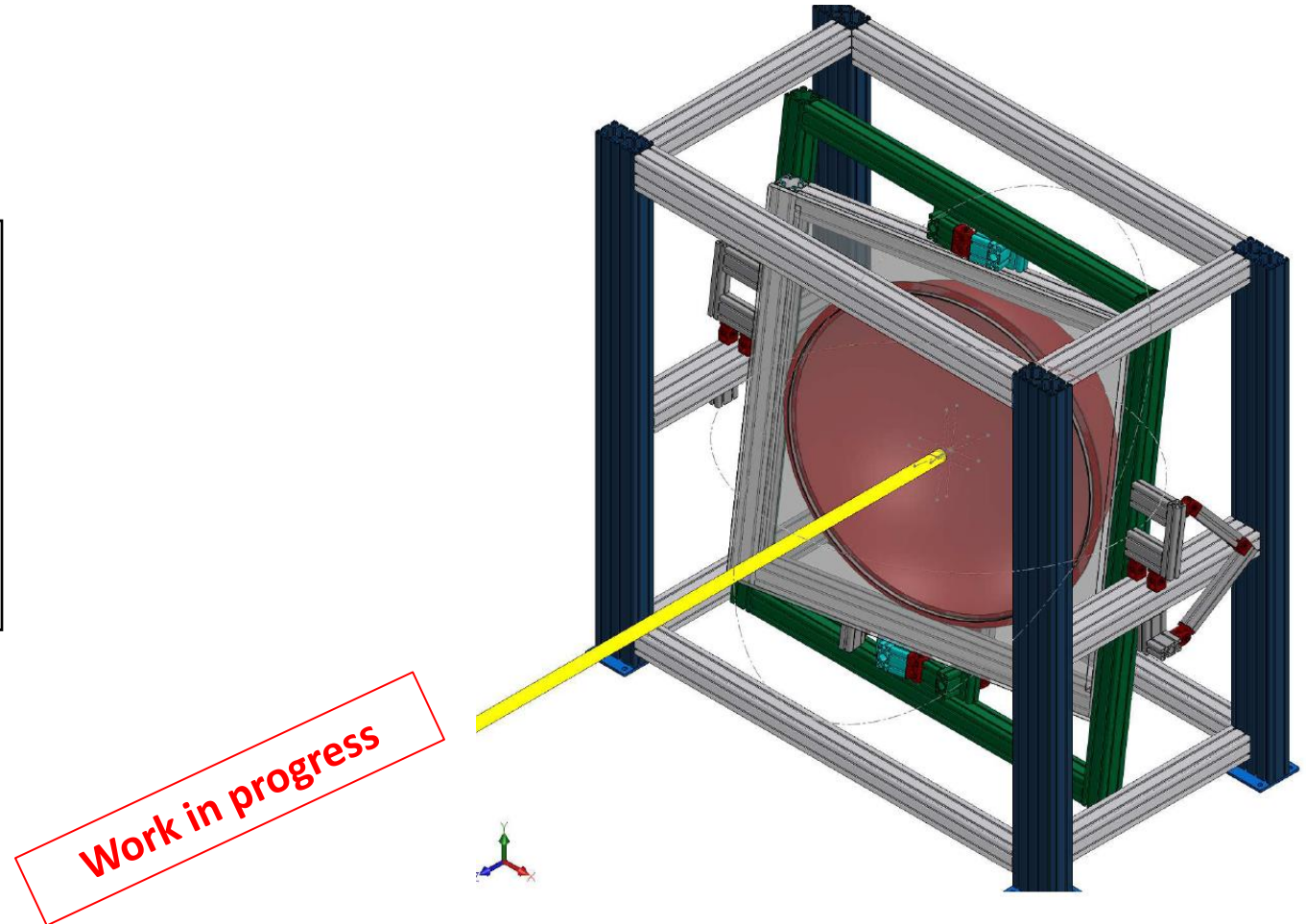


Measurement situation

Sphere Goniophotometer

2-axis suspension of the existing Klems measuring sphere for measuring various angles of incidence

Foto Messraum



Thanks for your attention!

