

# color meets flavor

Search for new phenomena  
in strong and weak interactions

Introductory meeting for TA Staff

# THE CmF TEAM

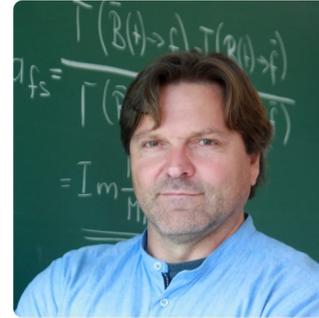
## Spokesperson and co-spokespersons



Prof. Dr.  
**Jochen Dingfelder**  
University of Bonn  
Spokesperson



Prof. Dr.  
**Johannes Albrecht**  
TU Dortmund University  
Co-Spokesperson

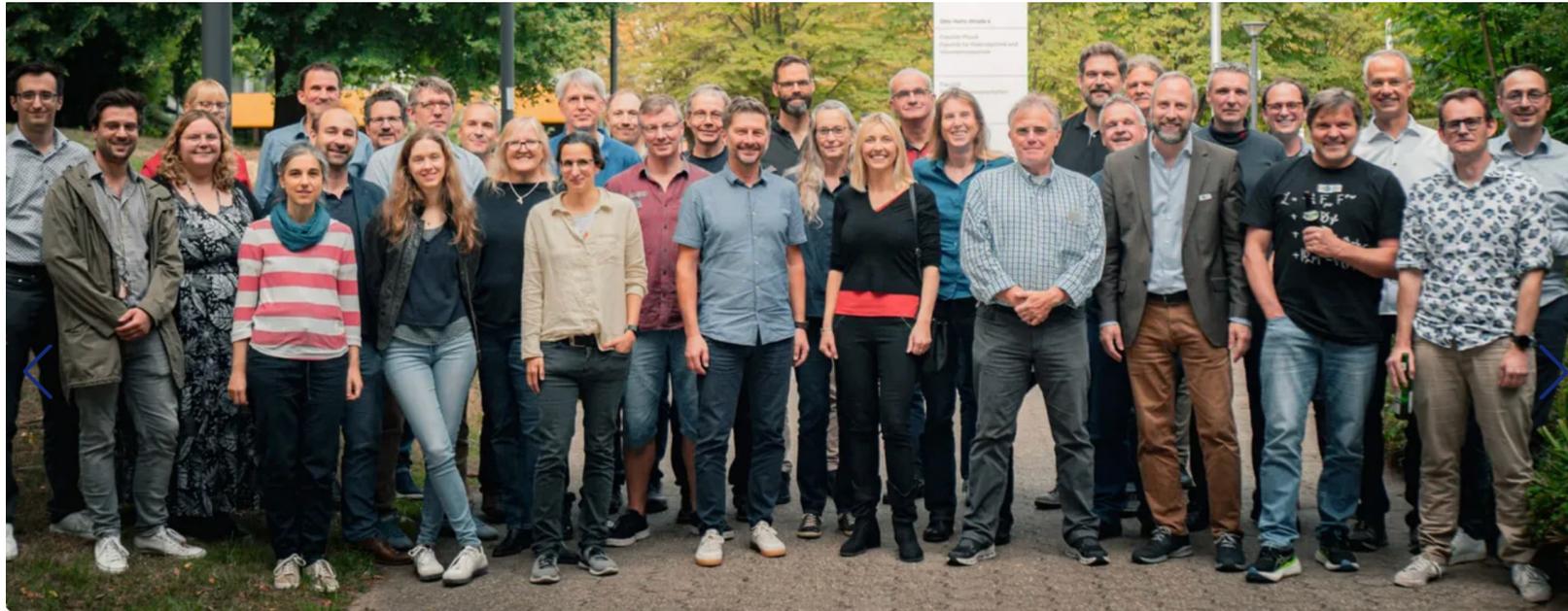


Prof. Dr.  
**Alexander Lenz**  
University of Siegen  
Co-Spokesperson



Prof. Dr. Dr. h.c.  
**Ulf-G. Meißner**  
Forschungszentrum Jülich  
Co-Spokesperson

## CmF team ... at constituent meeting in Dortmund



## **1. Introduction to CmF**

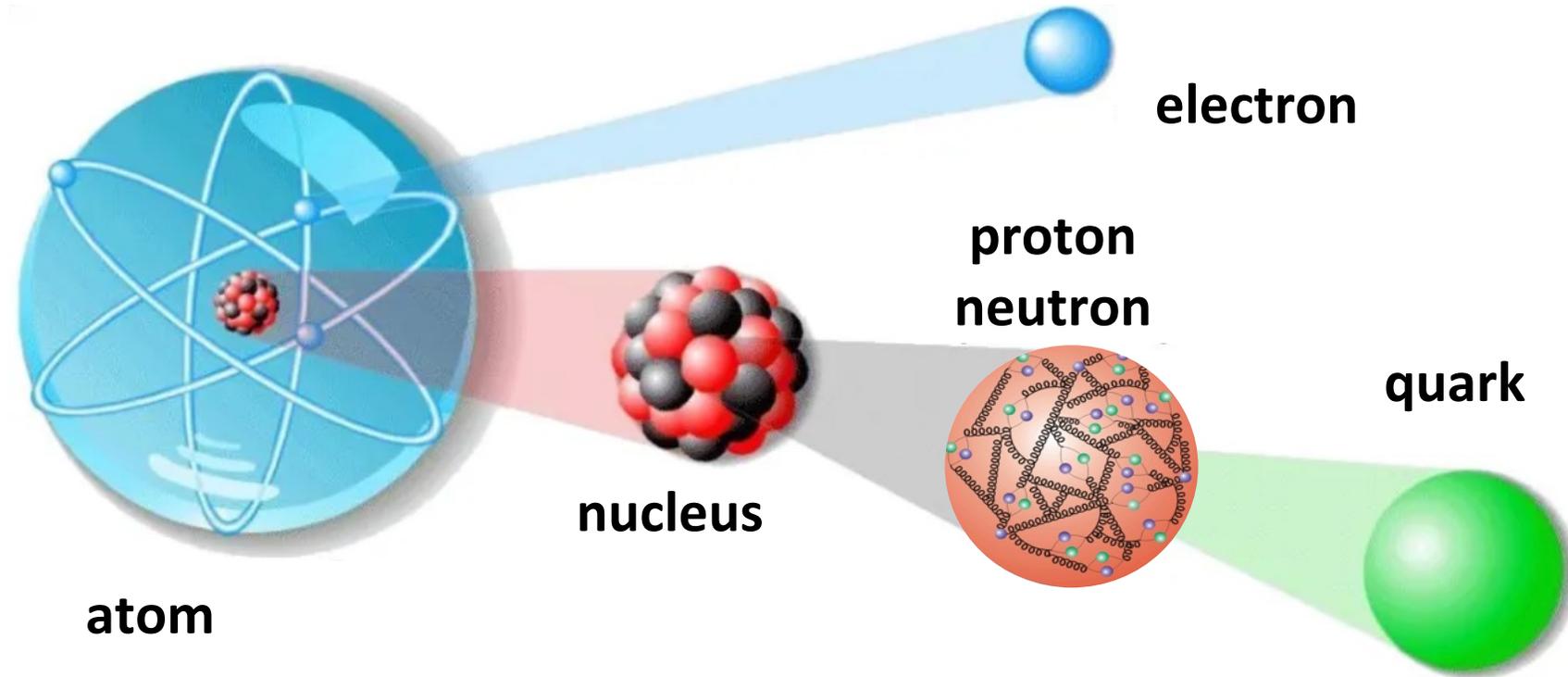
- Idea of CmF
- Research program & goals
- Structures
- Governance and administration (Cluster Office)

## **2. Becoming a CmF member**

## **3. Discussion time: Q&A**

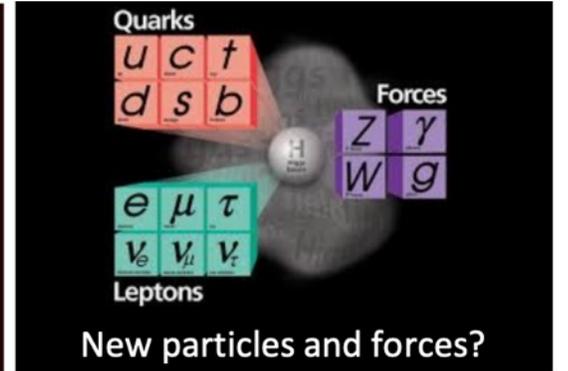
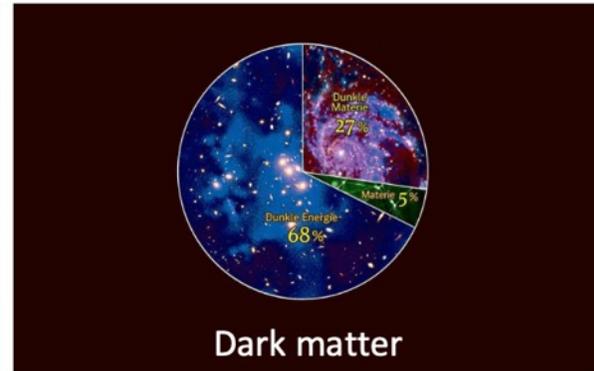
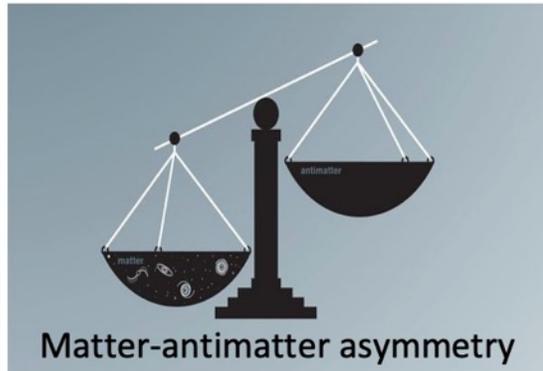
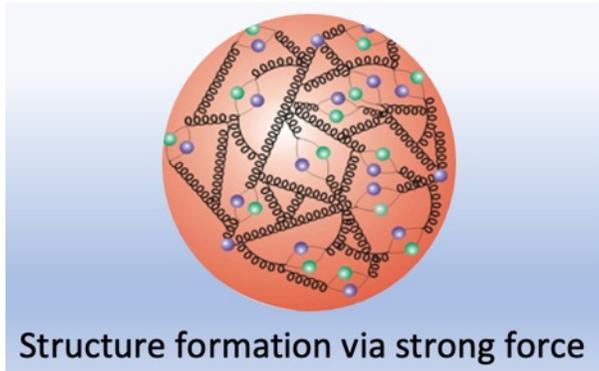
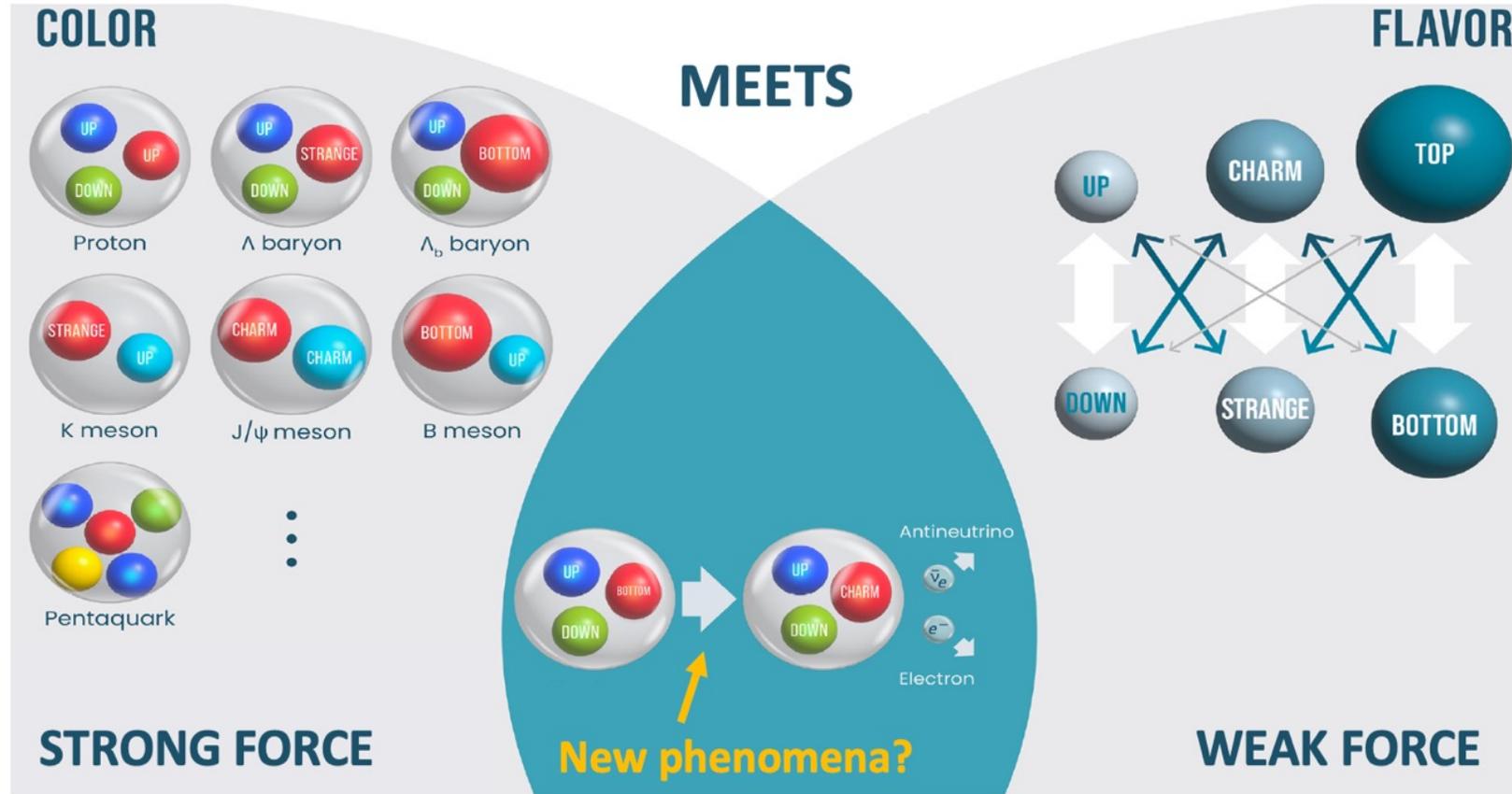
## **4. TA representatives in CmF**

# How does matter emerge?



# Why is there matter?

# COLOR AND FLAVOR

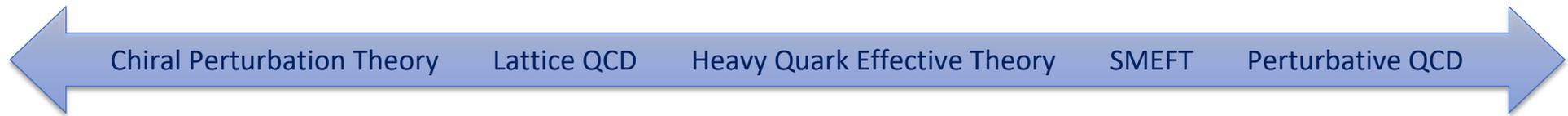


# PERFECT TEAM

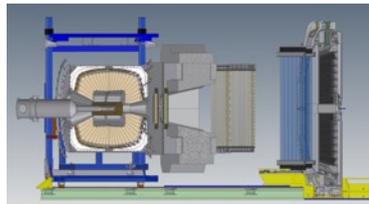
CmF groups **complement each other** in an ideal way and **cover whole energy spectrum**

	UP, DOWN	STRANGE	CHARM	BOTTOM	TOP	HIGGS	AXION
Experiments	INSIGHT @ ELSA (Bonn) AMBER (CERN)		LHCb (CERN) Belle II (KEK)		ATLAS (CERN)		BabyIAXO (DESY) SUPAX (Bonn)
Experimental Groups	Bonn, Dortmund, Siegen		Bonn, Dortmund		Bonn, Dortmund, Siegen	Bonn, Siegen, Dortmund	Bonn, Siegen, Dortmund
Theoretical Groups	Bonn, Jülich		Siegen, Dortmund, Bonn, Jülich		Bonn, Dortmund, Siegen	Bonn, Siegen	Bonn, Dortmund

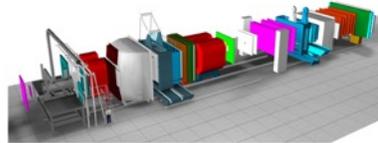
## Theories



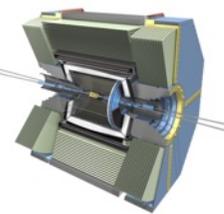
## Experiments



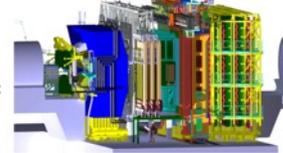
INSIGHT@ ELSA



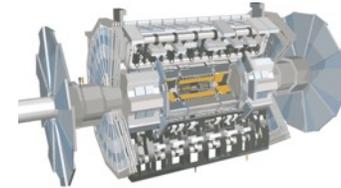
AMBER



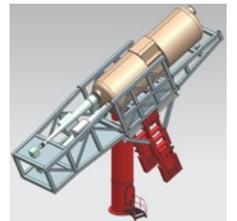
Belle II



LHCb



ATLAS



BabyIAXO

## Infrastructures



ELSA



Jülich Supercomputing



Research and  
Technology Center  
Detector Physics



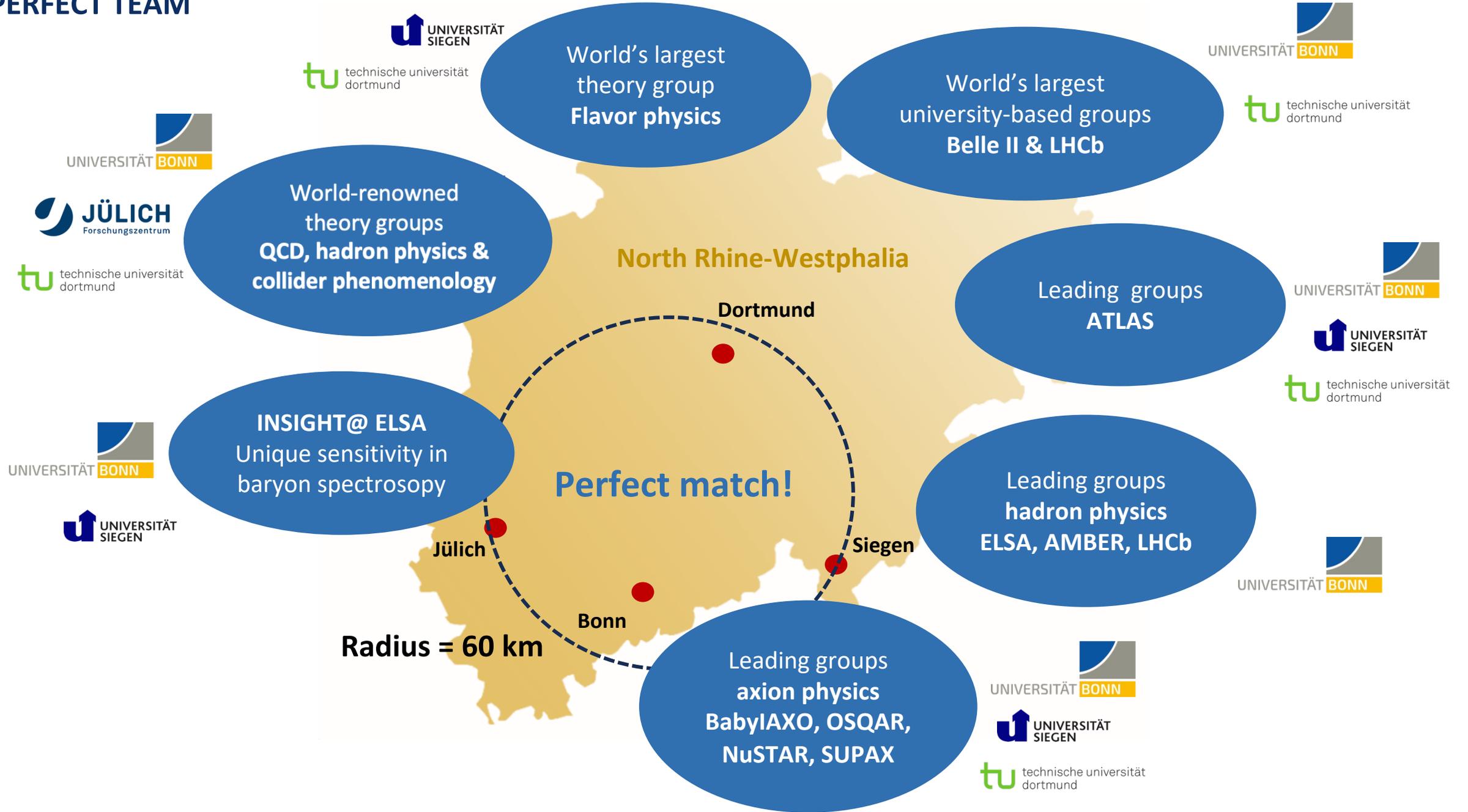
INCYTE Siegen



Bethe Center for  
Theoretical Physics

**World-leading center for the strong and weak interactions**

# PERFECT TEAM



# EXISTING COOPERATIONS AS SEED OF THE CLUSTER

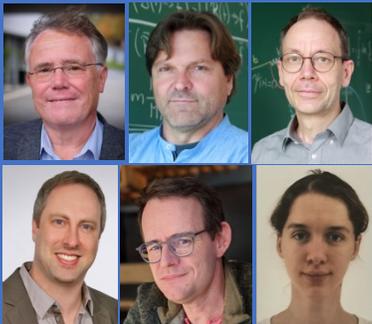
## Jülich – Bonn

Hadron theory + ELSA, LHCb, Belle II

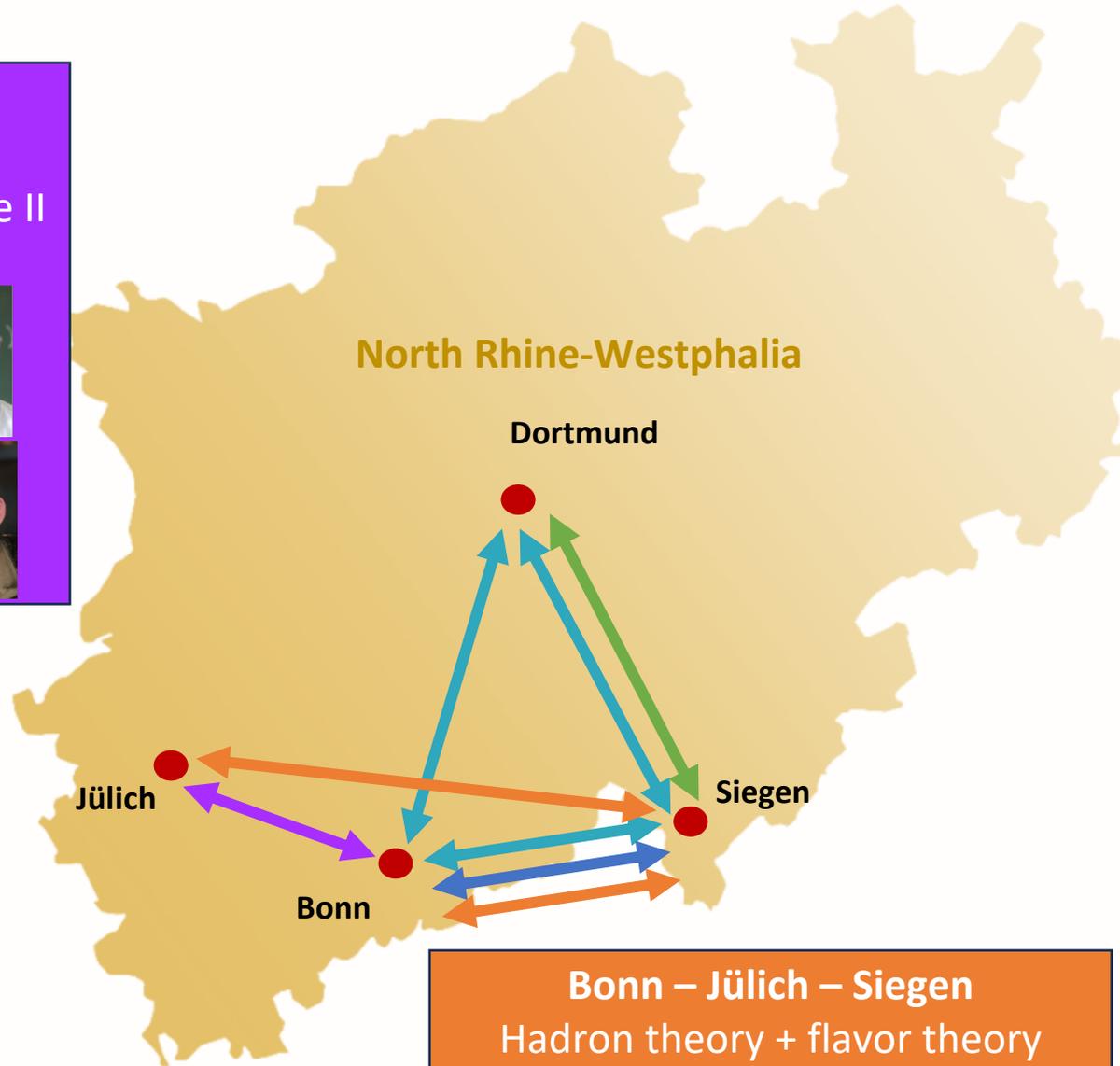


## Siegen – Bonn

Flavor theory + Belle II



## North Rhine-Westphalia



## Siegen – Dortmund

Flavor theory + LHCb



## Bonn – Dortmund – Siegen

ATLAS / high-energy theory



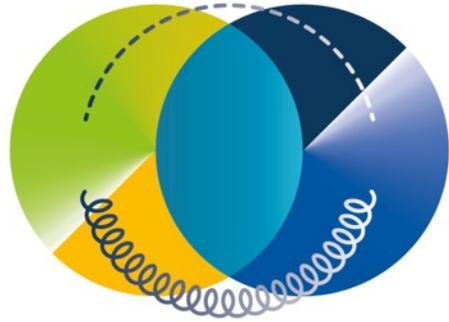
## Axion physics



## Bonn – Jülich – Siegen

Hadron theory + flavor theory

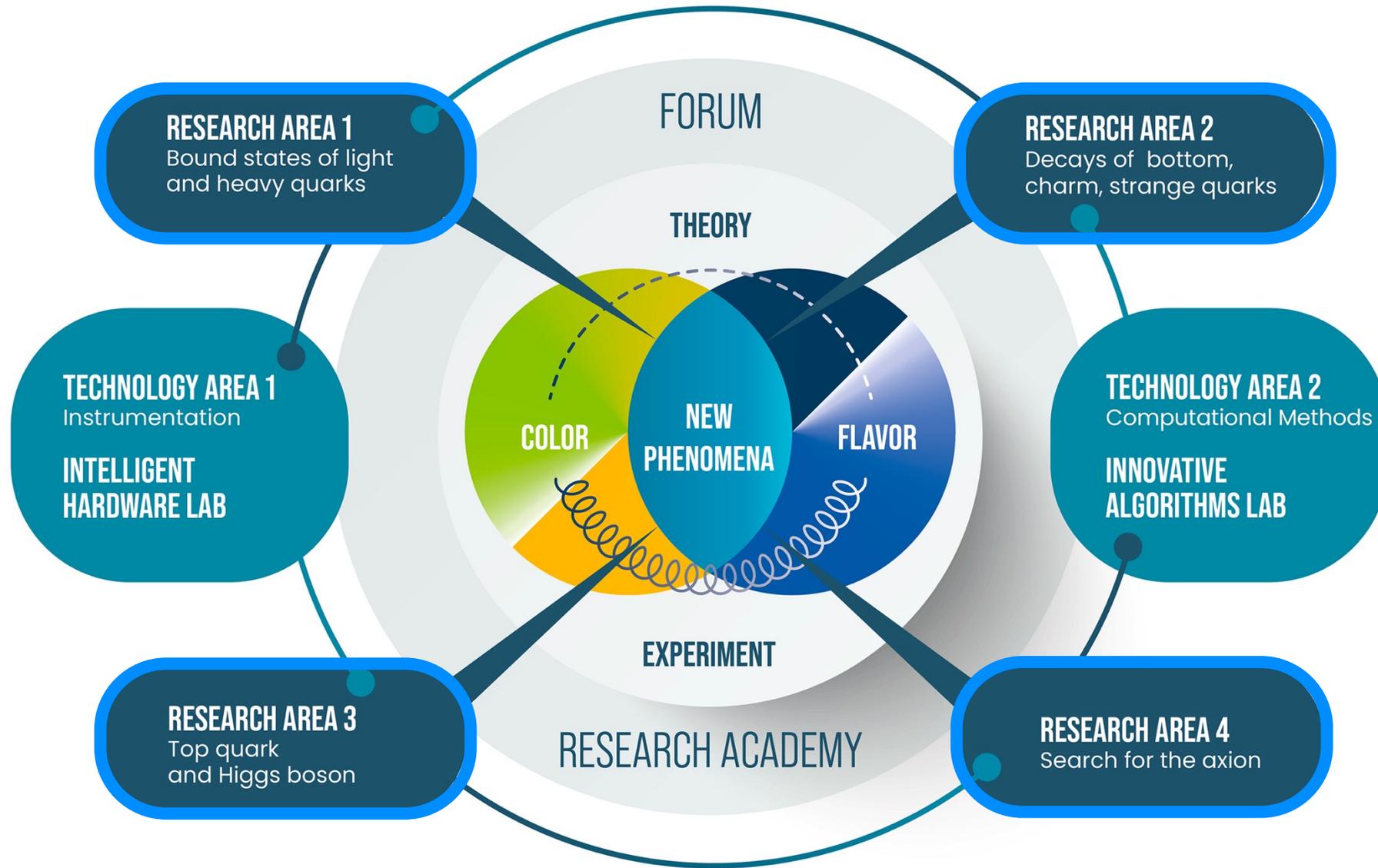




**color meets flavor**

**RESEARCH PROGRAM**

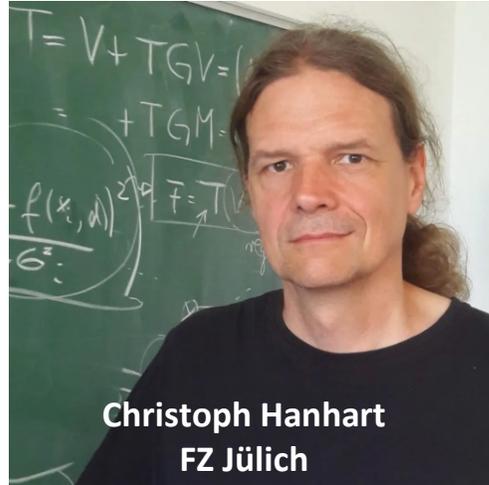
# RESEARCH STRUCTURE



# RESEARCH AREAS – CONVENERS

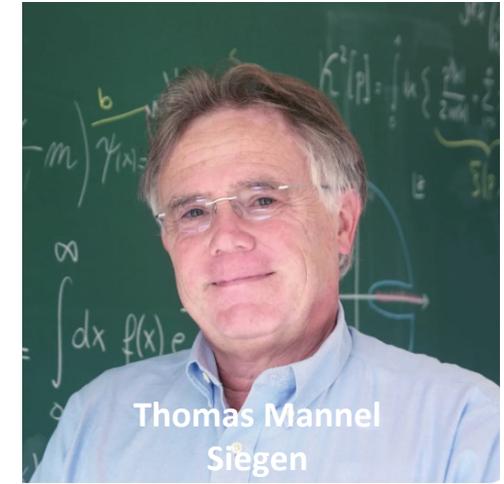
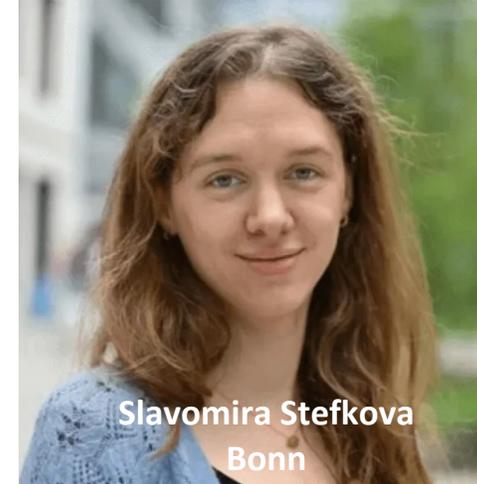
## Research Area 1

Bound states of light and heavy quarks



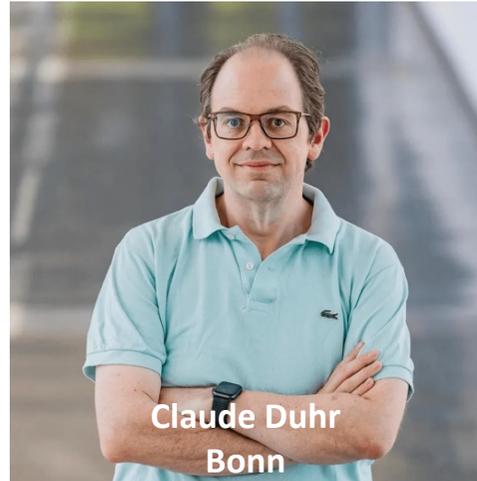
## Research Area 2

Decays of bottom, charm, strange quarks



## Research Area 3

Top quark and Higgs boson

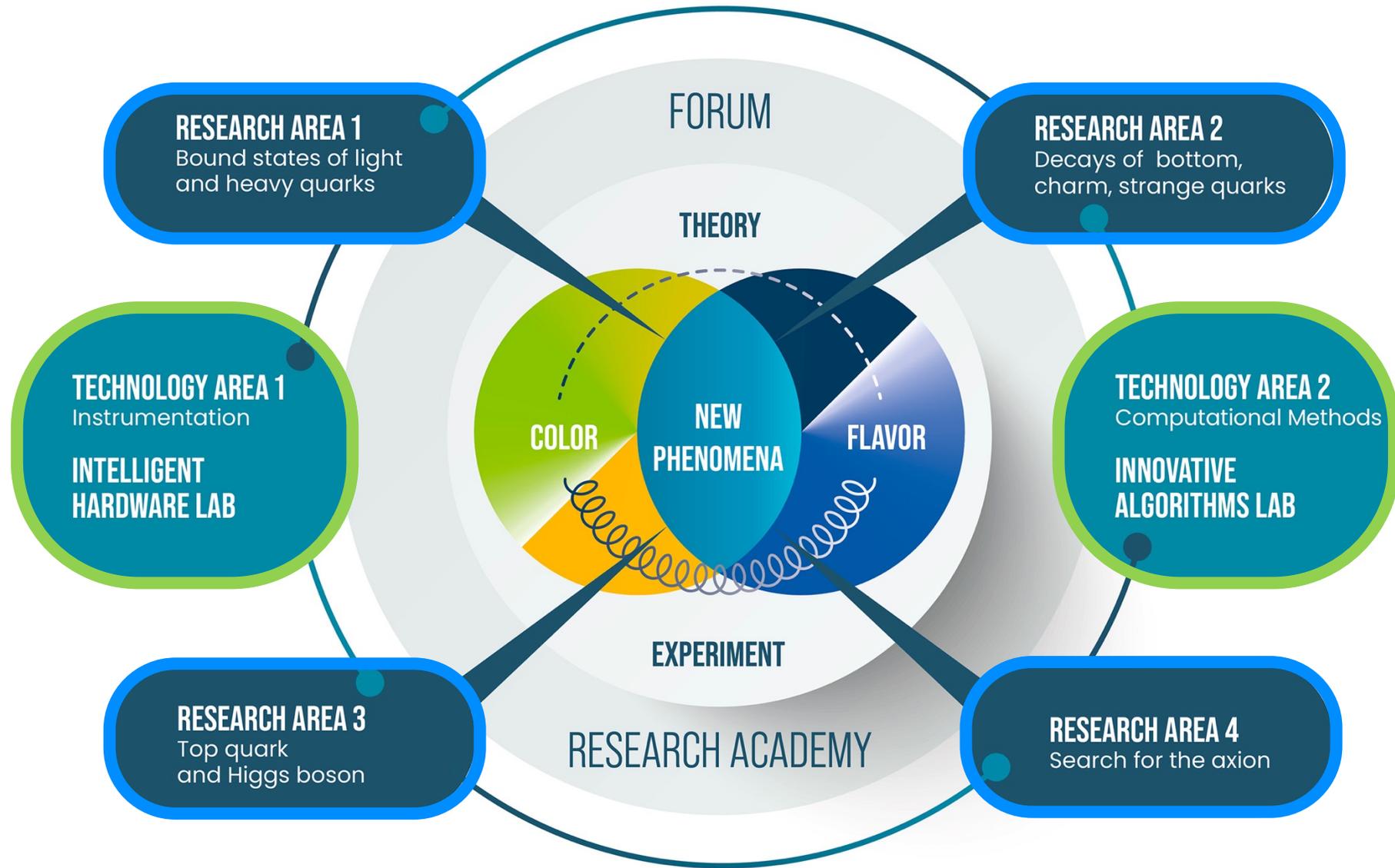


## Research Area 4

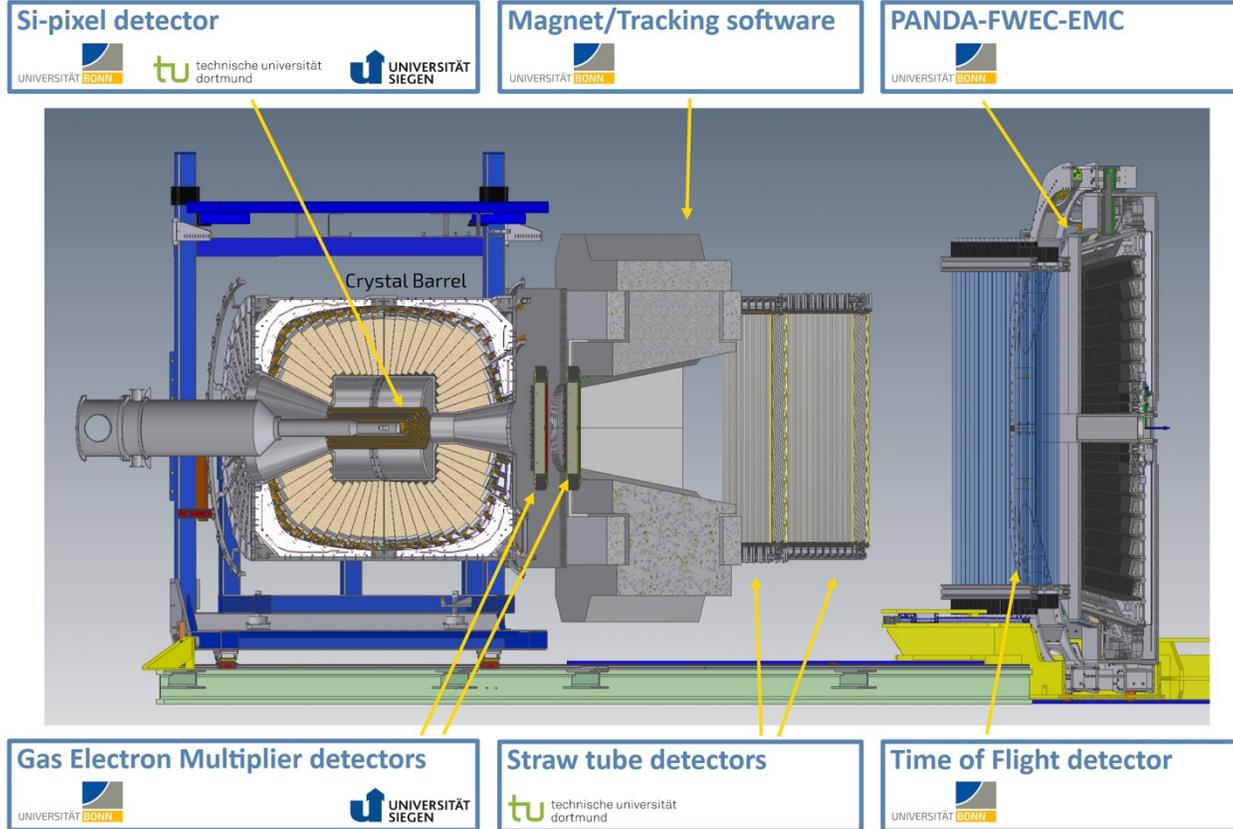
Search for the Axion



# RESEARCH STRUCTURE – TECHNOLOGY AREAS



# TECHNOLOGY AREA INSTRUMENTATION: INSIGHT @ ELSA



Construction, operation & physics harvest  
by all experimental CmF groups

Ideal combination of detector expertise

Reusing components of TU Dortmund's DELTA accelerator



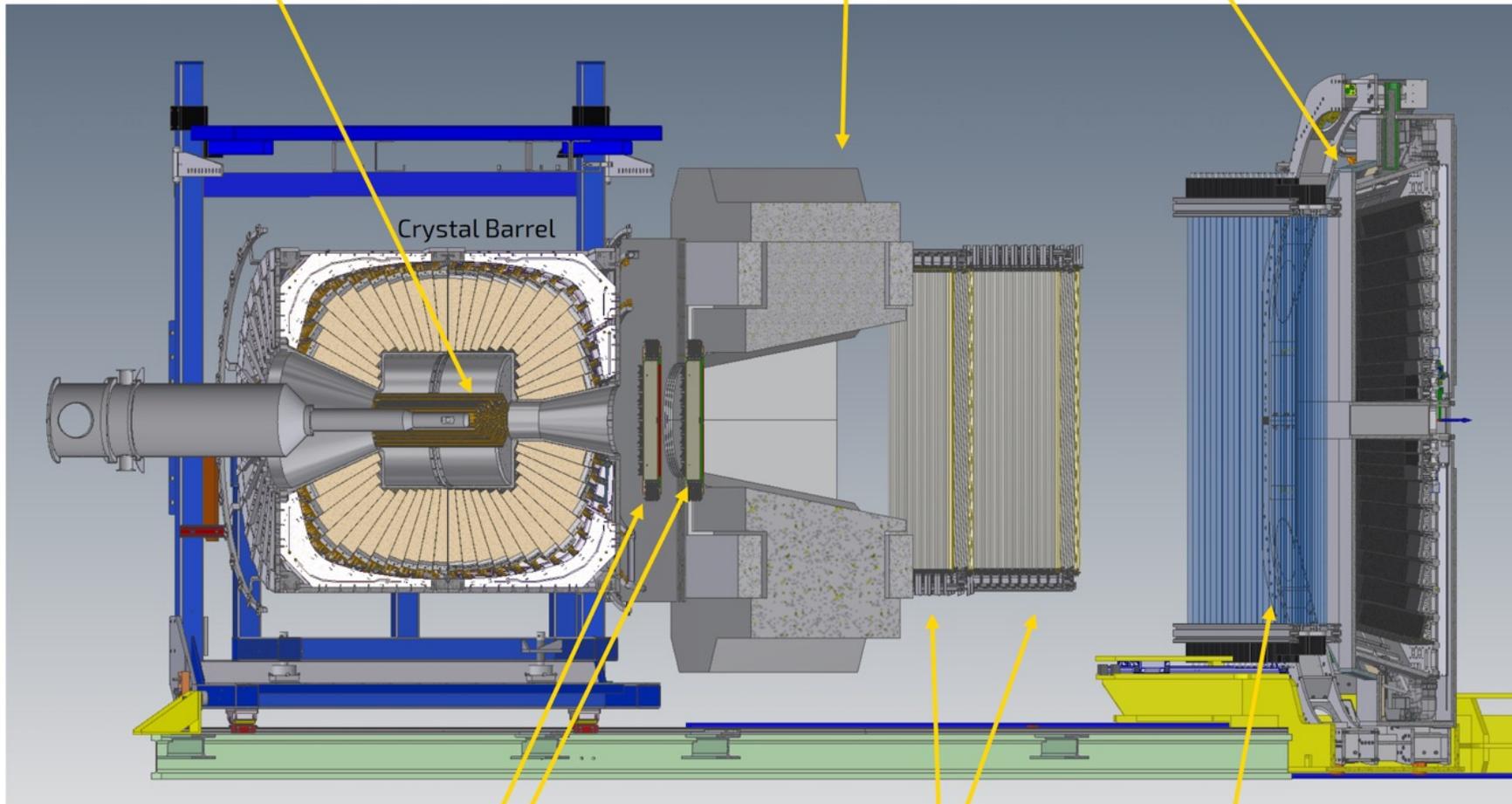
Si-pixel detector



Magnet/Tracking software



PANDA-FWEC-EMC



Gas Electron Multiplier detectors



Straw tube detectors

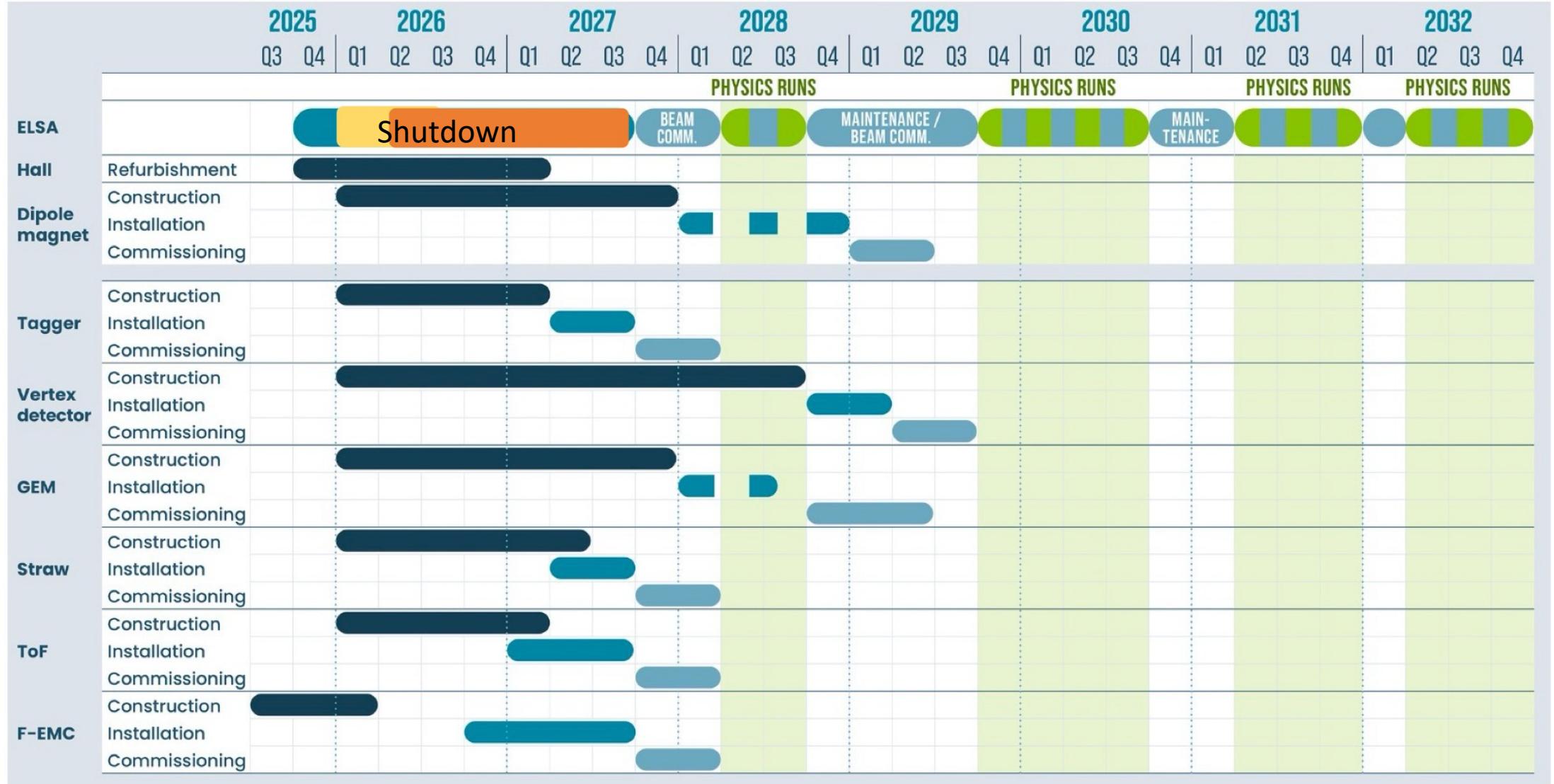


Time of Flight detector



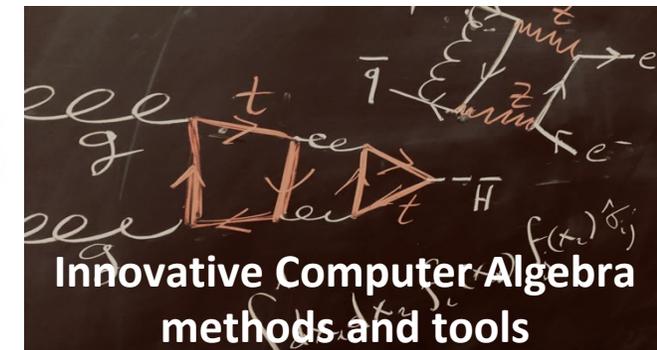
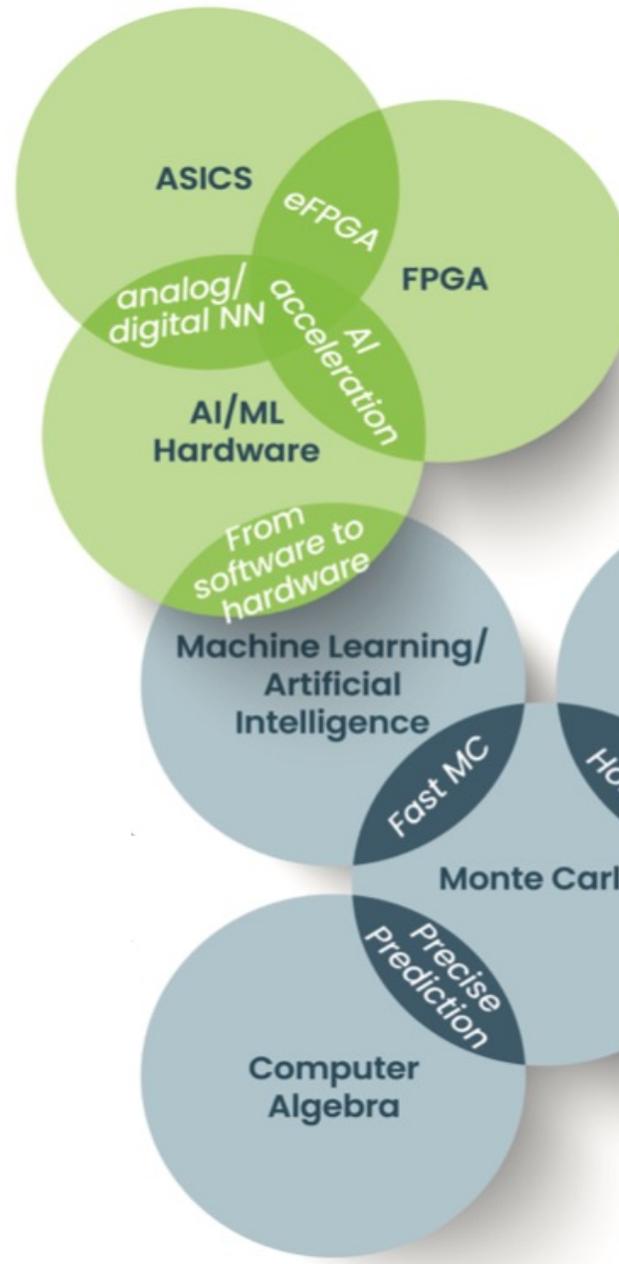
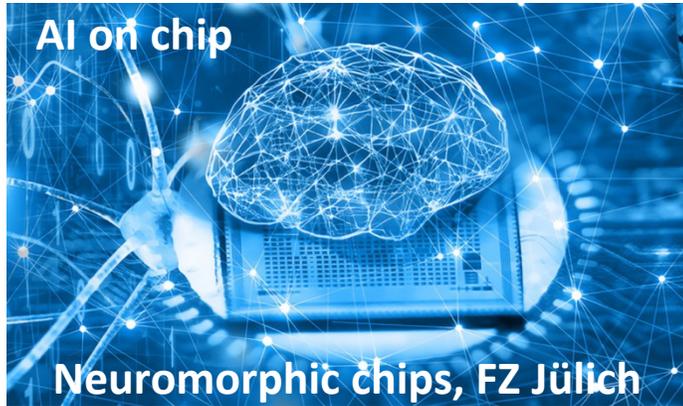
## TIMELINE FOR INSIGHT @ ELSA

from proposal



# Intelligent Hardware Lab

ELECTRICAL ENGINEERING  
COLOGNE CHIP



# Innovative Algorithms Lab

MATHEMATICS  
COMPUTER SCIENCE  
LAMARR INSTITUTE FOR MACHINE LEARNING & AI

# TECHNOLOGY AREAS – LABS

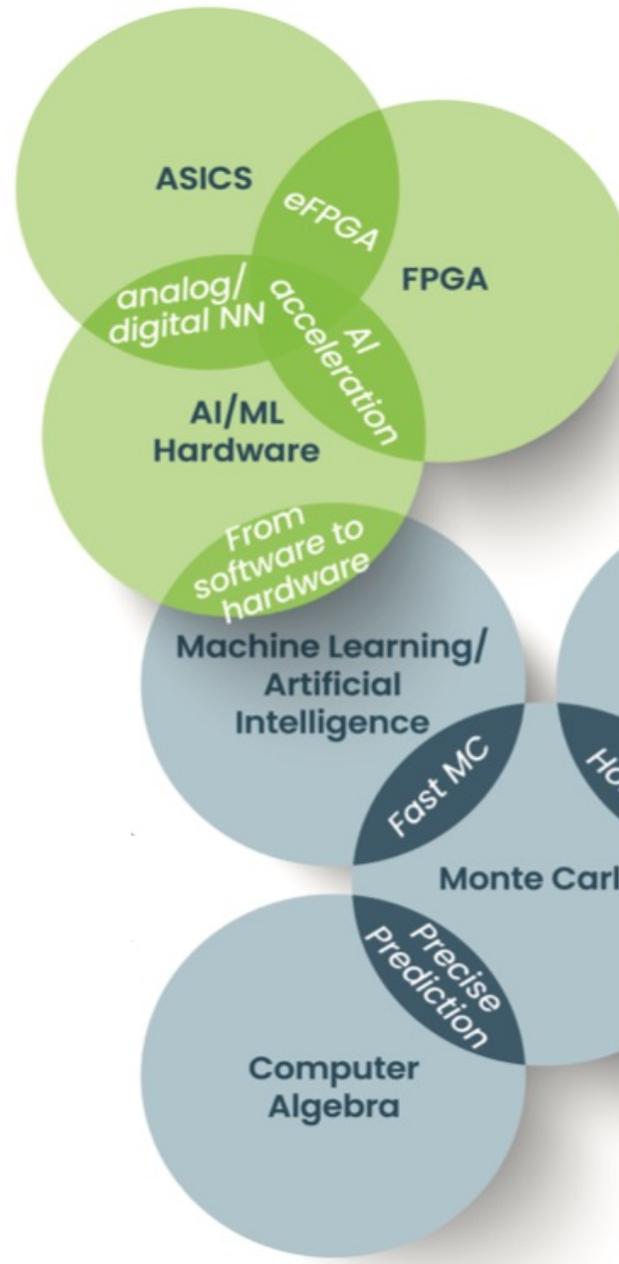
## Intelligent Hardware Lab

ELECTRICAL ENGINEERING  
COLOGNE CHIP

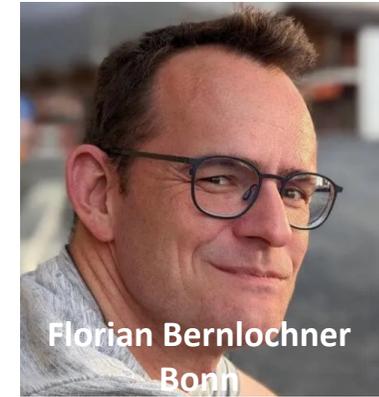
IHL leaders



Technology Area 1 Conveners



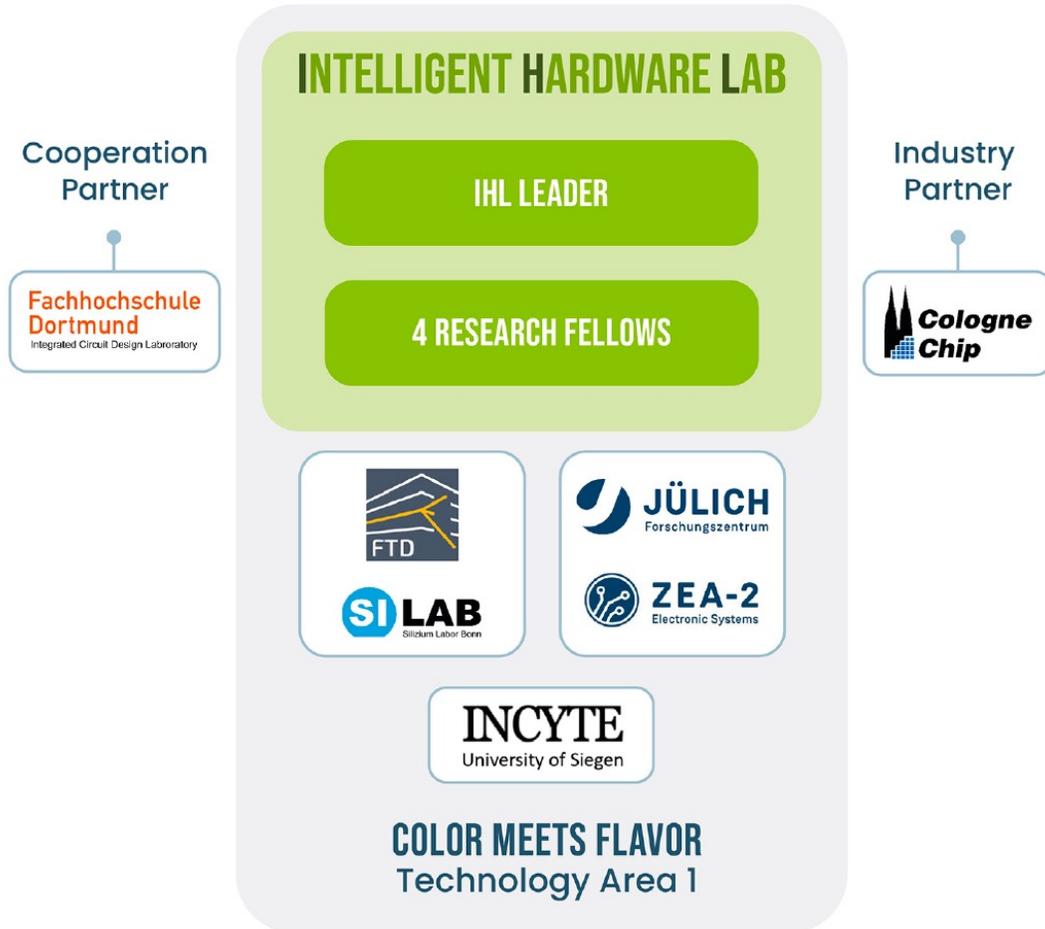
Technology Area 2 Conveners = IAL leaders



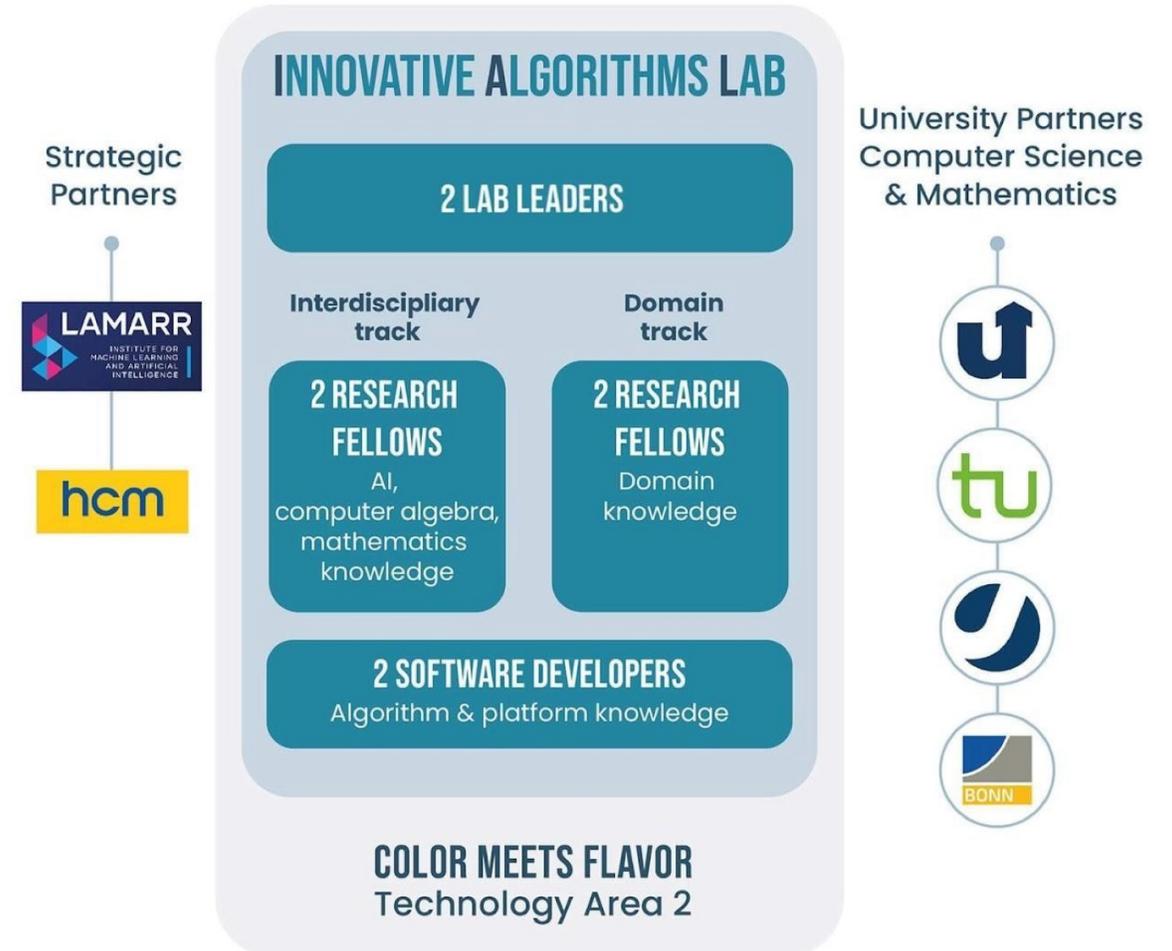
## Innovative Algorithms Lab

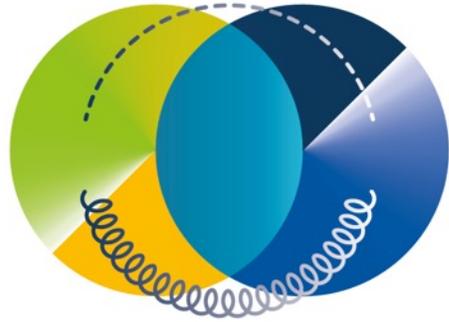
MATHEMATICS  
COMPUTER SCIENCE  
LAMARR INSTITUTE FOR MACHINE LEARNING & AI

# Intelligent Hardware Lab



# Innovative Algorithms Lab

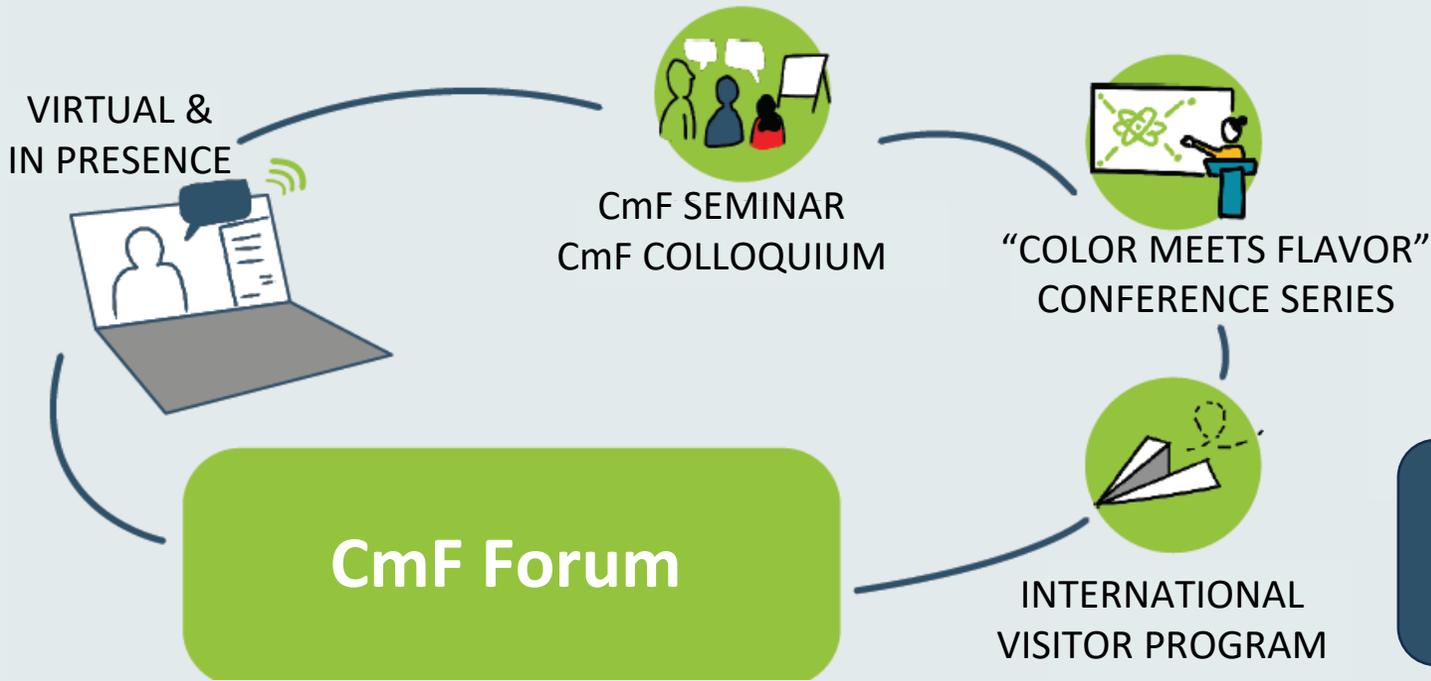




**color meets flavor**

**ENVIRONMENT  
AND  
STRUCTURES**

# STRUCTURES FOR EFFICIENT COLLABORATION

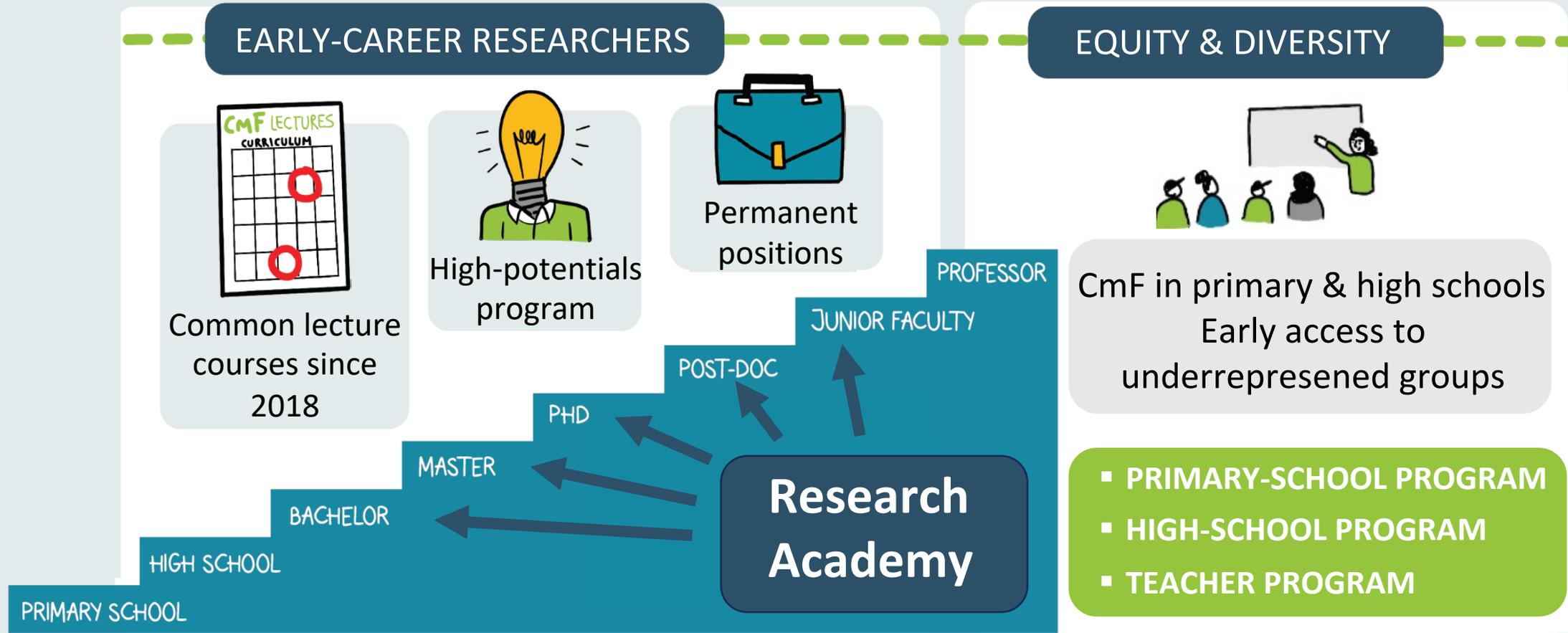


**Cross-functional research teams**

- + CmF RETREATS
- + R&D FORUM
- + IAL WEEKS
- + TRAININGS
- + many more



# STRUCTURES FOR AN OPTIMAL WORK ENVIRONMENT



# STRUCTURES FOR AN OPTIMAL WORK ENVIRONMENT

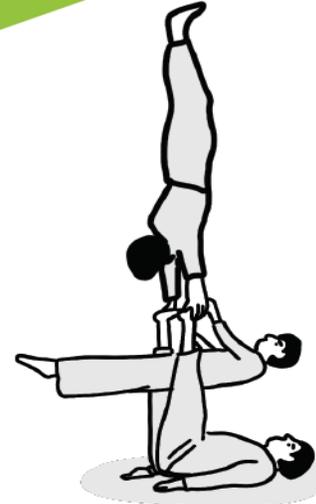
## RESEARCH DATA MANAGEMENT



IMPROVED PERMEABILITY  
BETWEEN EXPERIMENTS

## SCIENCE COMMUNICATION, TRANSFER

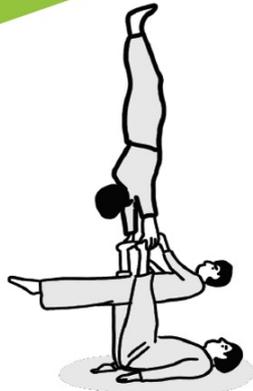
NEW IDEAS IN SCIENCE  
COMMUNICATION



KNOWLEDGE TRANSFER

## PHYSIKSHOW

NEW IDEAS IN SCIENCE COMMUNICATION



## CmF MEETS ARTS

New audiences



# PLETHORA OF EXISTING AND NEW OUTREACH ACTIVITIES

## News on our webpage



Chinese Academy of Sciences honors Prof. Ulf-G. Meißner

February 5, 2024



Prof. Thomas Mannel receives the Daidalos Coin

November 21, 2023



Podcast on elementary particle physics

December 13, 2024



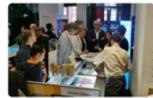
Prof. Alexander Lenz introduces Color meets Flavor at "Zwischen Brötchen und Borussia"

January 20, 2020



Helmholtz "Color meets Flavor" Excellence Network Approved

November 19, 2025



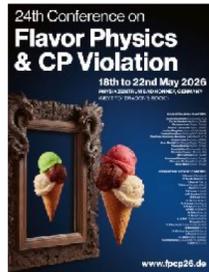
Color meets Flavor at first Dortmund Science Night

September 28, 2024



Third edition of "Physics at the Apollo" thrilled the audience

January 17, 2025



24th Conference on Flavor Physics & CP Violation

September 22, 2025



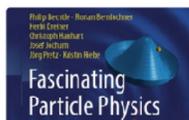
Prof. Herbert Dreiner receives Georg-Kerschensteiner-Prize

January 5, 2025



more than a lifetime International workshop

September 22, 2025



English Edition of "Fascinating Particle Physics" published

December 2, 2025



Color meets Flavor Constituent Meeting

July 15, 2025



55th Autumn School on High-Energy Physics

## Projects



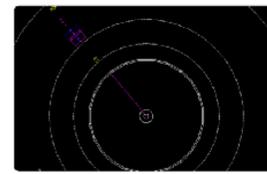
Outreach group: Subatomic Heroes. Siegen

September 24, 2025



Zwischen Brötchen und Borussia. Dortmund

September 24, 2025



CERN OPAL Masterclass

Machine Learning Masterclass. Bonn

## Projects on our webpage



Netzwerk Teilchenwelt Masterclasses. Bonn, Dortmund, Siegen

September 24, 2025



Explaining physics with acrobatics. Siegen

September 24, 2025



Barbara Frommann / Uni Bonn

Physics Show. Bonn



Rent A Prof. Siegen



Excursion to Forschungszentrum Jülich

Also on 9th February 2026

June 27, 2023



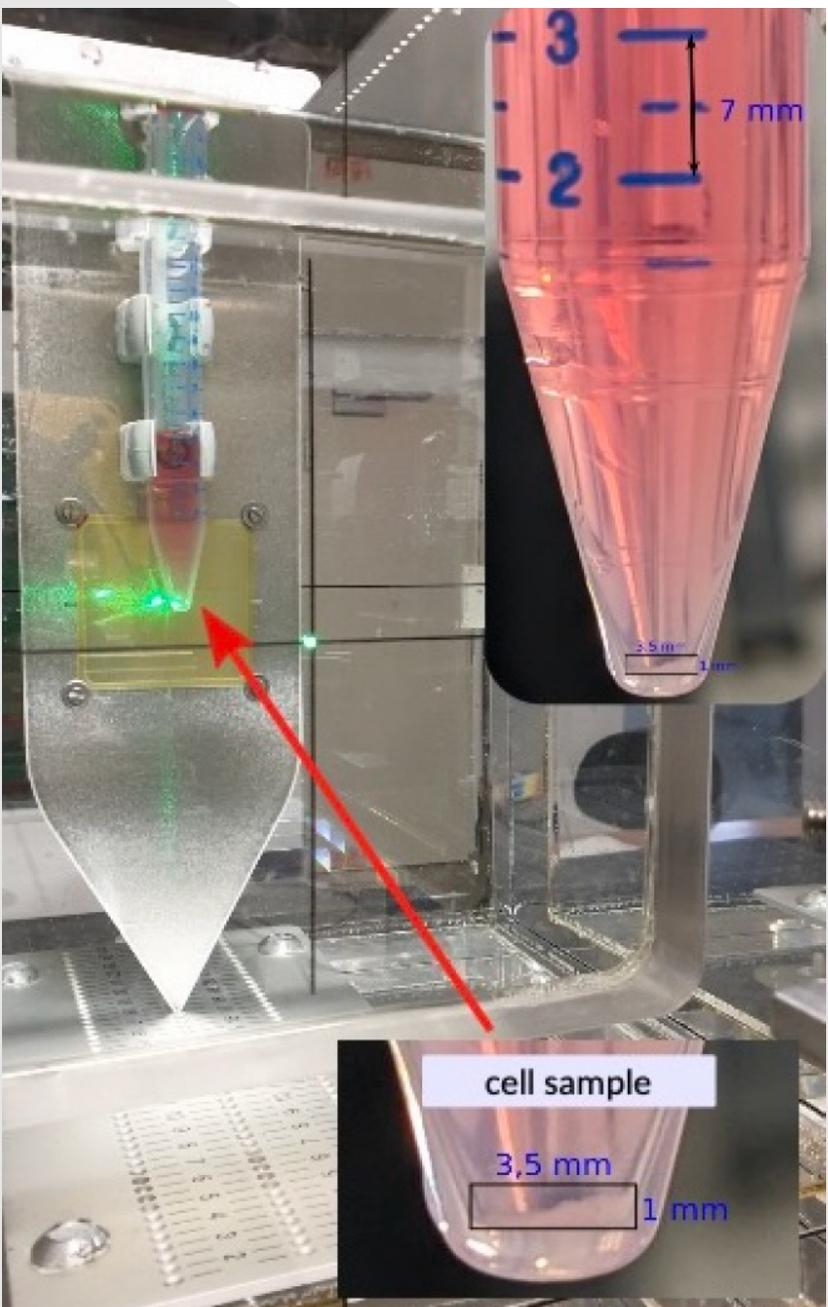
First Color Meets Flavor PhD School

A Color edition is planned for 2028

March 18, 2024

## Social Media





**INDUSTRY HUB**  
connects CmF with industry

**ACCELERATOR**

FLASH radiotherapy @ ELSA

**DETECTORS AND ASICs**

Imaging applications

**point8**  
data matters.

Start-up TU Dortmund

**SIMULATION**

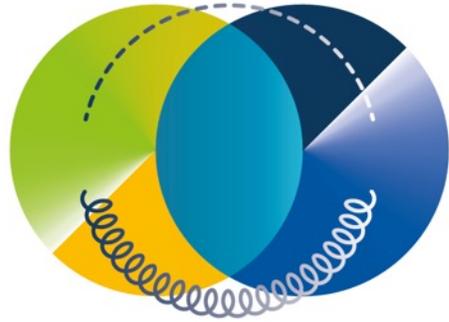
e.g. in medical physics

**DATA SCIENCE**

Industrial data mining, statistical analysis

Model developed @ TuDo

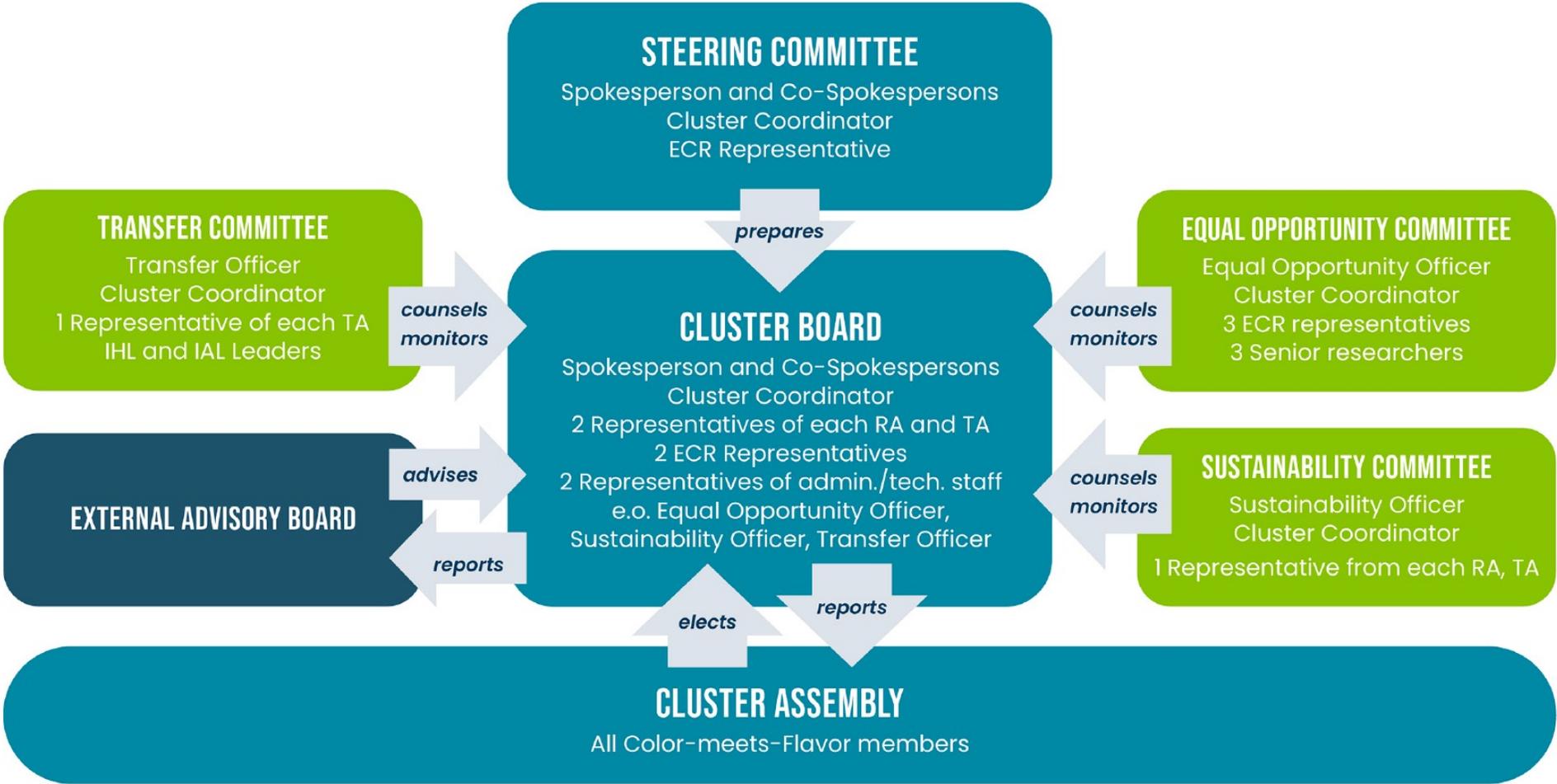
Monte Carlo simulaton



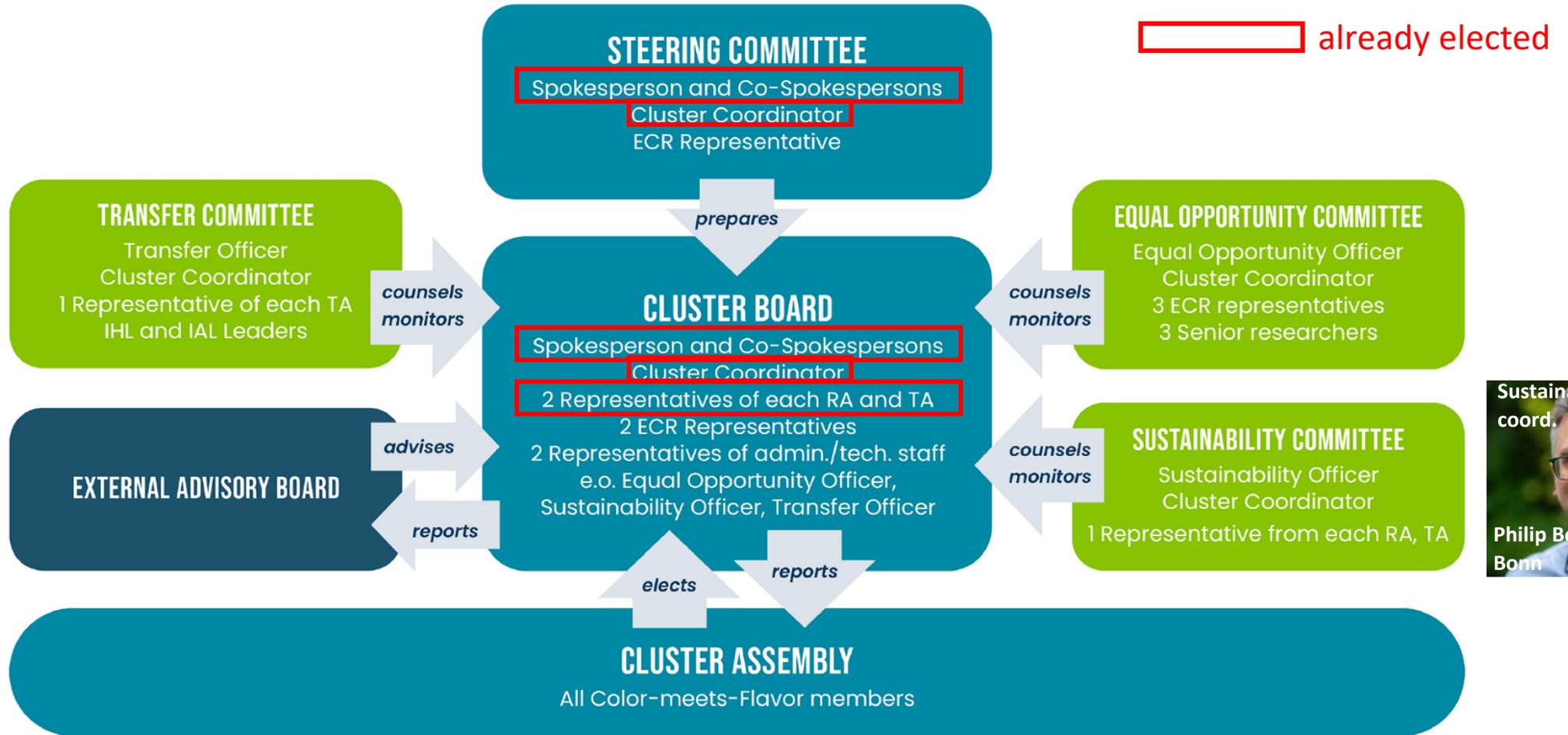
**color meets flavor**

**GOVERNANCE  
ADMINISTRATION  
ORGANIZATION**

# GOVERNANCE



# GOVERNANCE



## Next steps:

- Orientation meetings for ECR, admin. & techn. staff → temporary representatives as guests
- Formal election of ECR, admin. & techn. representatives at General CmF Assembly in July

## CLUSTER ADMINISTRATION – THE CLUSTER OFFICE

Cluster Office Members	FTE	Main tasks
Cluster Coordinator	1.0	General coordination of CmF activities and structural measures, financial planning, quality assurance
Research Academy Coordinator	0.5	Coordination of Research Academy
Forum Scientific Secretary	0.5	Coordination of CmF Forum, incl. international visitor program
Science Communicator	0.5	Science communication, outreach
Event Manager	0.5	Planning and support for CmF events
Cluster Team Assistant	1.0	Day-to-day administrative support



# NEW PERSONNEL: CLUSTER PROFESSORSHIPS + INVESTIGATOR GROUPS + PROJECT POSITIONS

Professorship	Univ.	
<b>Cluster Professorships</b>		
W3 BSM Phenomenology (TH)	UBo	→ offer made
W3 Computational Physics (TH)	USi	→ offer made
W2 Heavy Particles at ATLAS (EXP)	TUDo	
W2 Flavor Physics at LHCb (EXP)	TUDo	
W2 Detector Physics (EXP)	USi	→ offer made
W2 Hadron Spectroscopy at Belle II (EXP)	UBo	
<b>Strategic professorships in preparation for CmF</b>		
W2 Theoretical Particle Physics (TH)	TUDo	E. Stamou
W2 Hadron Physics at ELSA (EXP)	UBo	P. Hurck
W2 Non-Collider Particle Physics (EXP)	TUDo	J. Vogel
<b>Additional new professorships to be installed in the context of CmF</b>		
W3 Accelerator Physics (EXP)	UBo	
W3 Light New Physics & Dark Sectors (EXP)	TUDo	

+ 3 Investigator Groups (temp. W2 with 1 PhD position and own yearly budget)

+ several **doctoral and postdoctoral positions** for proposed projects

<https://color-meets-flavor.de>

# color meets flavor

Search for new  
phenomena in strong  
and weak interactions

Discover the cluster

Latest news



## EMAIL LISTS

Format: [cmf-xxx@listen.uni-bonn.de](mailto:cmf-xxx@listen.uni-bonn.de)

- cmf-all All users
- cmf-cb Cluster Board
- cmf-sc Steering Committee
- cmf-ra1 RA1
- cmf-ra2 RA2
- cmf-ra3 RA3
- cmf-ra4 RA4
- cmf-ta1 TA1
- cmf-ta2 TA2
- cmf-ihl IHL
- cmf-ial IAL
- cmf-transfer Transfer Committee
- cmf-edl Equal Opportunity Committee
- cmf-sustainability Sustainability Committee
- cmf-eab External Advisory Board
- cmf-ecr Earl Career Researchers
- ...

The lists are restricted to official **CmF members**.

If you are a member, you can subscribe at <https://listen.uni-bonn.de>

## ADMISSION OF MEMBERS

- |  |                          |  |
|--|--------------------------|--|
| 1. Faculty members                       | → regular members        | → application incl. CV and publications        |
| 2. Scientific staff + postdocs           | → regular members        | → application incl. CV and publications        |
| 3. Doctoral students                     | → student members        | → to be requested by group leader (CV)         |
| 4. Technical and administrative staff    | → non-scientific members | → to be requested by group leader              |
| 5. Scientists from external institutions | → associate members      | → upon request by regular member (CV and pub.) |

**Online registration form for CmF membership:**

<https://indico.hiskp.uni-bonn.de/category/117/>