HELMHOLTZ

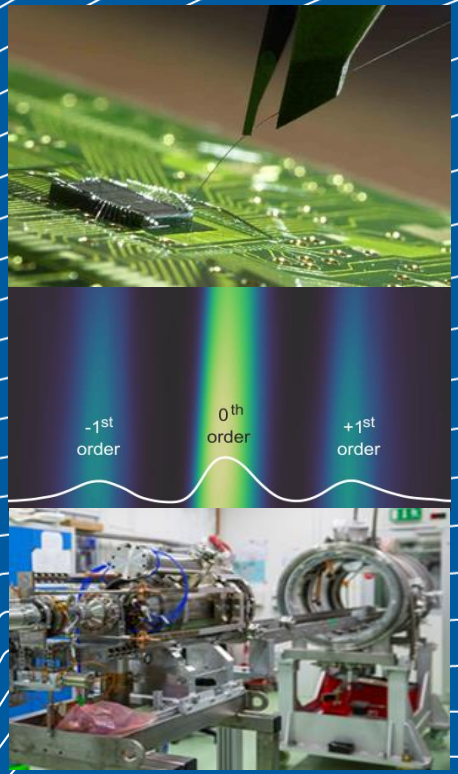
RESEARCH FOR
GRAND CHALLENGES

MT

MATTER AND TECHNOLOGIES

Introduction

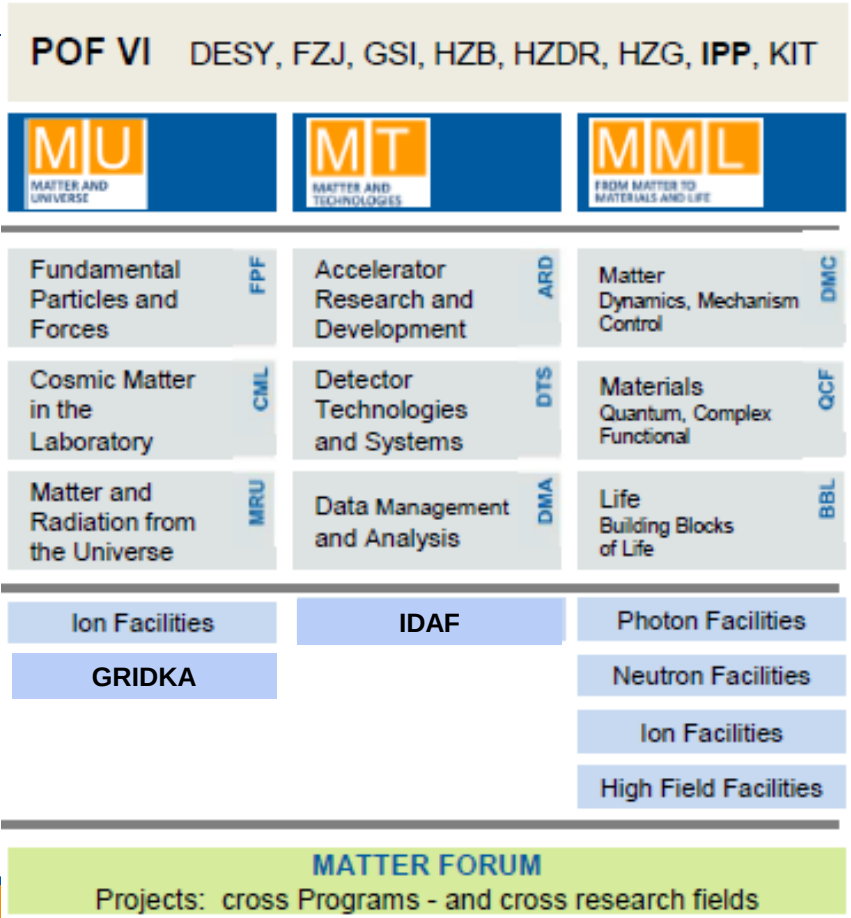
Ties Behnke (DESY)



GOAL OF THIS MEETING

- Discuss the MT program structure in view of POFIV
- Discuss the overall strategy of the program and the topics
- Understand what BMBF expects from us
- Learn about new developments in the program

HOW DO WE GO INTO POFIV?



No fundamentally new structures

Slight re-alignments in MU

Re-arrangements of the topics in MML

New topic (DMA) in MT (see later)

THE STRATEGIC REVIEW: JANUARY 2020

High level, strategic review

- Assumption: the detailed scientific review has taken place during the center review in 2018
- We should now define the direction in which we like to go for the next ~10 years
- The review takes place in a rather limited circle: details see next presentation by Friederike

FORSCHUNGSPOLITISCHE VORGABEN (FPZ)

The process:

BMBF formulates overarching goals for the

- Helmholtz Association as a whole
- The Research Area Matter
- Each program

We build a program based on the FPZ.

This is input from the BMBF, non-negotiable, though discussed with the FB.

The final version is still under discussion,
finalization early 2019

OVERARCHING GOALS

- Dynamic development of the research by continuous development of the POF process
- Sharpening the profiles and improving networking within the research areas
- Strengthen user facilities by increasing usage from external users
- Develop a digitization strategy for the association
- Create an attractive research environment
- Strengthen the transfer to society and industry
- Build bridges between the research areas

GOALS FOR THE RESEARCH FIELD

Fundamental questions which should be adressed in POFIV:

- How did the universe develop from the big bang until today – what are the building blocks of matter, and where are the origins of the elements we see today?
- Can we understand atomic and molecular processes at all relevant lengths and times scales? Can we control these processes, to develop new functional materials and agents?
- Can we develop and build modern highly brilliant and compact accelerators and modern detectors and sensors for research and industry?

OTHER COMMON TOPICS

- Structural goals
  - National/ international cooperations
  - Creating attractive sites and environments
  - Strengthening transfer
- Common initiatives
  - Matter Forum/ Innovation Pool
  - Responsibility to society/ ethical questions
  - Talent management
- Connections to other research areas/ cross cutting measures
  - Material research
  - Digitization/ Digitalization
  - Structural biology
  - Radiation research

MT GOALS

- Die **Physik der Beschleunigung geladener Teilchen** soll umfassend untersucht werden und die Beschleunigertechnologie im Hinblick auf höchste Intensität, Brillanz, Luminosität, Kompaktheit und Stabilität weiterentwickelt werden.

- Das Verständnis der Physik des **Nachweises von Strahlung** soll weiter vertieft und entwickelt werden und in konkreten Detektorsystemen resultieren, die bis an die physikalischen Grenzen der Orts-, Energie- und Zeitauflösung gehen.

- Die **Digitalisierung des wissenschaftlichen Prozesses** in allen Forschungsfeldern in Materie soll mit innovativen Methoden und Technologien vorangetrieben werden, um die in Materie in extremer Menge und hoher Komplexität entstehenden Daten zu verarbeiten und optimal Wissen aus diesen Daten zu extrahieren und bereitzustellen.

MT GOALS

Each research topic should formulate 2-3 “nachhaltbare” goals

- These are not milestones, but goals
- They should be high level, but not arbitrary:
  - Clear relation to the POFIV period
  - Well defined, non-exchangable
  - They might contain an element of risk

- At the topic level this should be complemented by more detailed goals, exact scope still to be defined.

PLAN FOR TODAY

Plenary:
- Understand the process/ the expectations
- Review where we are, what we already know

Parallel
- Work within the topics on the definition of the topic for POFIV
- Discuss possible milestones/ goals
- Discuss the process to arrive at a comprehensive program proposal by mid-next year

Plenary
- Discuss the non-scientific parts of the proposal
- Discuss activities with other programs and research fields
- Define a roadmap towards POFIV