Working Group on Information
Arbeitsgruppe Information (AGI)

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Overview of Invited Talks and Sessions
(Lecture hall H1)

Invited Talks

AGI 1.1	Tue	11:15–11:45	H1	**Challenges in data preservation in high energy physics** — •Ulrich Schwickerath
AGI 1.2	Tue	11:45–12:05	H1	**The PUNCH4NFDI Consortium in the NFDI** — •Thomas Schörner
AGI 1.3	Tue	12:05–12:25	H1	**DAPHNE4NFDI - Daten aus Photonen und Neutronenexperimenten** — Anton Barty, Bridget Murphy, Astrid Schneidewind, Wiebe Lohstroh, •Christian Gutt
AGI 1.4	Tue	12:25–12:45	H1	**FAIRmat – Making Materials Data Findable and AI Ready** — Claudia Draxl, •FAIRmat team
AGI 2.1	Tue	13:30–14:00	H1	**NFDI4Phys research data management for the next decades** — •Hans-Günther Döbereiner
AGI 2.2	Tue	14:00–14:30	H1	**Semantic Research Data Management in the National Research Data Initiative (NFDI)** — •Sören Auer
AGI 2.3	Tue	14:30–15:00	H1	**NFDI, EOSC, Gaia-X: Three Data Clouds - One Goal?** — •Klaus Tochtermann
AGI 2.4	Tue	15:30–16:00	H1	**Research Data Management and Higher Education in Physics** — •Janice Bode, Philipp Jaeger

Sessions

AGI 1.1–1.4	Tue	11:15–12:45	H1	**RDM I: NFDI consortia (joint session AGI/AKPIK)**
AGI 2.1–2.5	Tue	13:30–16:30	H1	**RDM II: Perspectives in Research Data Management (joint session AGI/AKPIK)**
AGI 3		Wed 16:30–18:00	MVAGI	**Mitgliederverdammlung der AGI**

Annual General Meeting of the Working Group on Information

Mittwoch   16:30–18:00   MVAGI

- Begrüßung
  Genehmigung des Protokolls der letzten Mitgliederversammlung
  Wahl der Protokollführerin oder des Protokollführers

- Bericht des Sprechers und der stellvertretenden Sprecherin

- Wahl des/der Sprecher/in
  Wahl des/der stellvertretenden Sprecher/in

- Aktuelle Projekte und Schwerpunkte

- Verschiedenes

AGI 1: RDM I: NFDI consortia (joint session AGI/AKPIK)

Time: Tuesday 11:15–12:45   Location: H1

Invited Talk   AGI 1.1   Tue 11:15   H1
Challenges in data preservation in high energy physics — •Ulrich Schwickerath — CERN, CH-1211 Genf 23

We preserve our data to extend the scientific reach of our experiments. In high energy physics it is cost-efficient to warehouse data from completed experiments on the tape archives of our national and international laboratories. To use data archived in such a way we must also preserve our ability of use the data, specifically the documentation, computing environment and software of the experiments and analyses. Successful data preservation thus requires careful planning and ongoing effort. The contribution illustrates the challenges of long-term data preservation with experience especially from LEP, and will give a brief overview over the ongoing efforts in the LHC experiments at CERN.

Invited Talk   AGI 1.2   Tue 11:45   H1
The PUNCH4NFDI Consortium in the NFDI — •Thomas Schörner — Deutsches Elektronen-Synchroton (DESY), Hamburg, Germany

With the "Nationale Forschungsdateninfrastruktur" (NFDI, national research data infrastructure), a massive effort is undertaken in Germany to provide a coherent research data management, to make research data sustainably utilisable and to implement the FAIR data principles.

PUNCH4NFDI is the consortium of particle, astro- and astroparticle, as well as hadron and nuclear physics within the NFDI. It aims for a FAIR future of the data management of its community and at harnessing its massive experience not least in "big data" and "open data" for the benefit of "PUNCH" sciences (Particles, Universe, NuClei and Hadrons) as well as for physics in general and the entire NFDI.

In this presentation, we will introduce the work programme of PUNCH4NFDI, its connection to everyday work in the physical sciences and beyond, and in particular the idea of digital research products and the PUNCH science data platform.

Invited Talk   AGI 1.3   Tue 12:05   H1
DAPHNE4NFDI - Daten aus Photonen und Neutronen-experimenten — Anton Barty[1], Bridget Murphy[2], Astrid Schneidewind[3], Wiebe Lohstroh[4] und •Christian Gutt[5] — [1]DESY, Hamburg — [2]CAU Kiel — [3]FZ Jülich — [4]TU München — [5]Universität Siegen

Die Methoden der Synchrotron- und Neutronenstreuung werden in einer großen, interdisziplinären Bandbreite von Wissenschaftsfeldern angewendet. Die Nutzer repräsentieren dabei verschiedene Fachbereiche in den Naturwissenschaften, die sich dem gemeinsamen Bedarf an anspruchsvoller, schneller und tiefer Datenanalyse sowie den Herausforderungen der Implementierung eines qualifizierten Forschungsdatenmanagements gegenübersehen.

Ziel von DAPHNE4NFDI ist es, eine übergreifende Infrastruktur zu schaffen, welche die Forschungsdaten entsprechend den FAIR-Prinzipien verarbeitet. DAPHNE4NFDI bringt dazu Großforschungseinrichtungen und Nutzer/innen aus den wichtigsten Anwendungsbereichen zusammen, um das Datenmanagement im Sinne der FAIR-Kriterien voranzutreiben.

Invited Talk   AGI 1.4   Tue 12:25   H1
FAIRmat – Making Materials Data Findable and AI Ready — Claudia Draxl[1] and •FAIRmat team[2] — [1]Institut für Physik, Humboldt-Universität zu Berlin — [2]https://www.fair-di.eu/fairmat/fairmatteam

The enormous amounts of research data produced every day in the field of condensed matter physics and the chemical physics of solids represent a gold mine of the 21st century. This gold mine is, however, of little value, if these data are not comprehensively characterized and made available. How can we refine this feedstock, i.e., turn data into knowledge and value? Here, a FAIR (Findable, Accessible, Interoperable, and Re-usable) data infrastructure plays a decisive role. Only then, data can be readily shared and explored by data analytics and artificial-intelligence (AI) methods. Making data Findable and AI Ready (a forward-looking interpretation of the acronym) will change the way how science is done today.

In this talk, we discuss how the NFDI consortium FAIRmat (https://fair-di.eu/fairmat) is approaching these goals, and how researchers can profit from our first steps already now.

AGI 2: RDM II: Perspectives in Research Data Management (joint session AGI/AKPIK)

Time: Tuesday 13:30–16:30   Location: H1

Invited Talk   AGI 2.1   Tue 13:30   H1
NFDI4Phys research data management for the next decades — •Hans-Günther Döbereiner — Institut für Biophysik, Universität Bremen

NFDI4Phys.de is applying to become part of the NFDI.de process. We are working towards digital transformation of academia from the viewpoint of physics with an emphasis on disciplinary and transdisciplinary research. For a list of our domains, see https://nfdi4phys.de/domains/. Data need to become FAIR (Findable, Accessible, Interoperable, Reusable). We promote FAIR Digital Objects (FDOs). These are, e.g., digital twins of objects in real life with a unique identifier. For a detailed list of our task areas and strategy, see https://nfdi4phys.de/task-areas/. We strive to categorise data according to their structure based on the hierarchical emerge of levels in nature, see https://nfdi4phys.de/emergence/. This implies building a bridge between natural and social sciences, engineering, and the humanities. Key to these efforts is to develop physics of complex systems further. We need to structure the qualitative by quantifying it with semantic metrics. Generally, the techniques to do so are mainly available, scattered across various disciplines, waiting to be picked up. We need to overcome the complexity barrier in our minds to make progress. Quantum supremacy provided by quantum computing will eventually provide another level of computing power. Finally, faced with tremendous opportunities, we urgently need to develop ethics of information in order to guide us in judging the impact of technology on our society.

Invited Talk   AGI 2.2   Tue 14:00   H1
Semantic Research Data Management in the National Research Data Initiative (NFDI) — •Sören Auer — TIB, Welfengarten 1b, 30167 Hannover, Germany

In this talk, we will give an overview of the concepts and implementation of semantic Research Data Management for the National Research Data Initiative (NFDI). We will introduce vocabularies and ontologies for establishing a common understanding of research data and showcase their use in the context of the NFDI initiatives NFDI4Ing, NFDI4Chem, and NFDI4DataScience. We give an overview of three open technology components, ready to be used: - Terminology service for the collaborative creation of terminologies, vocabularies, and ontologies: https://service.tib.eu/ts4tib/index - Open Research Knowledge Graph (ORKG) for organizing scientific contributions in a knowledge graph: https://www.orkg.org - Leibniz Data Manager as a meta-data repository for research data: https://labs.tib.eu/info/projekt/leibniz-data-manager/

Invited Talk   AGI 2.3   Tue 14:30   H1
NFDI, EOSC, Gaia-X: Three Data Clouds - One Goal? — •Klaus Tochtermann — Düsternbrooker Weg 120, 24105 Kiel

Currently, there are three data clouds having an influence on how data management will be shaped in Europe in the future: NFDI, Gaia-X and EOSC. This talk will focus on the synergies of and difference between these three major projects.

The talk will explore how the alignment of these Open Science infrastructures will significantly shape (open) science system of the future. It will shed light on the following questions: Which cooperations are necessary to successfully organise the exchange of scientific resources?

How do they complement each other to advance the implementation of the FAIR principles as a whole? Which aspects are crucial for future engagement?

break

Invited Talk AGI 2.4 Tue 15:30 H1
Research Data Management and Higher Education in Physics — •Janice Bode[1] and Philipp Jaeger[2] — [1]Westfälische Wilhelms-Universität Münster, Germany — [2]University of Manitoba, Canada and Bergische Universität Wuppertal, Germany

This year, funding has been awarded to three NFDI consortia from the physics community. DPG is involved in all of them, aiming to provide a platform for collaboration and exchange of ideas. As its students organization, jDPG also got involved as well as representatives of the Federal Conference of Physics Student Councils (ZaPF - Zusammenkunft aller deutschsprachigen Physikfachschaften).

If research data management (RDM) is to be promoted throughout the physics community, there is no way around reaching out to physicists in their early stages of education. This should be achieved in close alignment between the consortia and the stakeholders in higher education in physics to avoid redundant work and incompatible developments. To this end, we discuss possible routes towards implementing RDM in the physics curricula at low expenses in terms of both effort and funds.

Topical Talk AGI 2.5 Tue 16:00 H1
Discussion — •Philipp Jäger[1], Uwe Kahlert[2], and Tim Ruhe[3] — [1]University of Manitoba, Canada and Bergische Universität Wuppertal, Germany — [2]RWTH Aachen University — [3]Technische Universität Dortmund

In order to provide data obtained in physics experiments to the respective communties and to society as a whole, these data need not only to be stored in a sustainable way, but also be prepared and maintained. Such an effective research data management (RDM) does not only require unified solutions with respect to the anticipated resources, but also common standards across various scientific disciplines. We will discuss current and future intiative of RDM with the speakers of the session.

AGI 3: Mitgliederverdammlung der AGI

Time: Wednesday 16:30–18:00 Location: MVAGI

Mitgliederversammlung der AGI