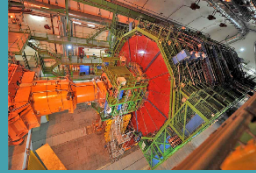


Onboarding

Digital Transformation in
Fundamental Research on
Universe and Matter

Research Mission



- We discover new particles yielding deep insights into the fundamental laws of physics
- Observe and explore distant galaxies, stars and new planets
- Investigate the structure and function of proteins drugs and viruses
- Discover new materials
- Observe chemical reactions in real-time

Community Self-Organization Committee

KAT	Astroteilchenphysik
KET	Elementarteilchenphysik
KfB	Beschleunigerphysik
KFN	Forschung mit Neutronen
KFS	Forschung mit Synchrotronstrahlung
KFSI	Forschung nuklearen Sonden & Ionenstrahlen
KHuK	Hadronen- und Kernphysik
RDS	Rat Deutscher Sternwarten

Challenges and
Opportunities
of Digital
Transformation
in Fundamental
Research on
Universe and Matter

New Funding in Digital Transformation 11/2025→10/2028

BMFTR Funding

ErUM-Pro

Project funding
for Experiments



ErUM-Data

120 M€ / 10 years
Digital Transformation
+ ErUM-Data-Hub

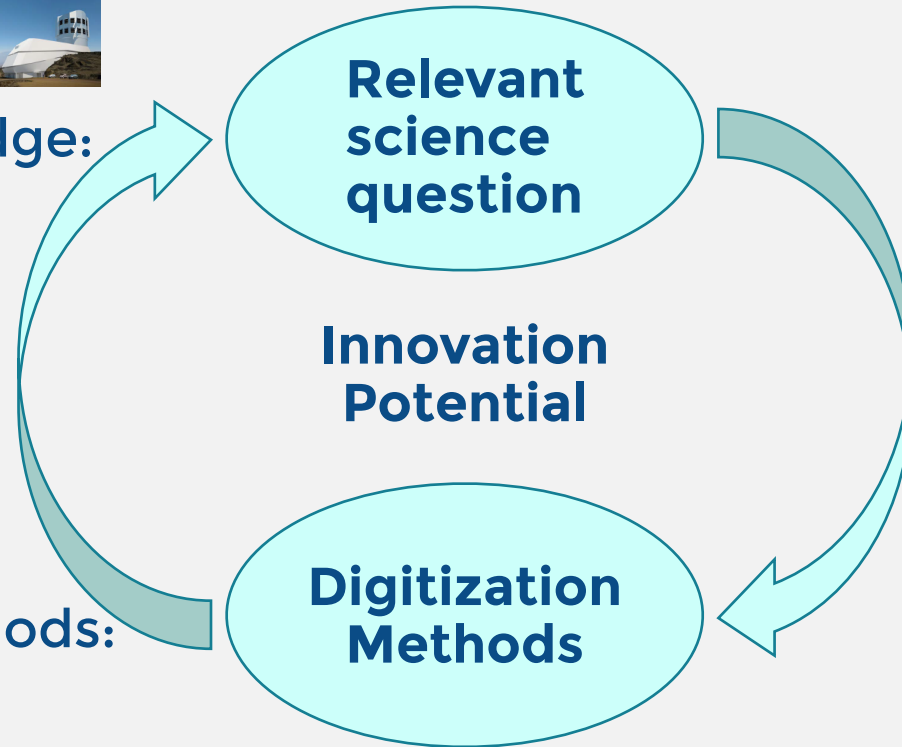
Consortium	Area	Topic
DEEP	Compute	Steigerung der Dateneffizienz in eingebetteten Prozessoren durch künstliche Intelligenz
FUSE	Compute	Federated Unified Storage Environment
MorphoSphere	Compute	Repositorium für digitalisierte Morphologie als integrative Plattform im Dreieck von Nutzerfacilities ...
PEARLS	Compute	Präzision in energiebewusster KI-Forschung für CO2-arme Lösungen
SUSFECIT	Compute	Nachhaltige Föderierte Computing-Infrastrukturen
BRAID	Reconstruction	Domänenübergreifende Vernetzung: KI-basierte, detektorunabhängige Rekonstruktions-Frameworks ...
ErUM-ARIA	Simulation	Methoden zur effizienten Ressourcennutzung für physikalische Simulationen
AALearning	Analysis	Adversariales Lernen als neues Werkzeug in der Grundlagenphysik und darüber hinaus
BeyondVoxels	Analysis	Hierarchical Analysis, Processing and Visualization of Large-Scale Synchrotron Radiation Imaging Data
CmarT	Analysis	Entwicklung von lokal adaptiver Tomographie für die Untersuchung von hierarchisch komplexer Materie
ErUM-IFT-2	Analysis	Informationsfeldtheorie für Experimente an Großforschungsanlagen
FoMoCID	Analysis	Basismodell zur Echtzeitinterpretation von Rohdaten in kohärenter Mikroskopie
QC4ErUM	Analysis	Quantum Computing für ErUM: Aufbau eines Kompetenzzentrums, das ErUM-Wissenschaftler:innen ...
SciFM	Analysis	Grundlagenmodelle in Astrophysik und Teilchenphysik
AirMon-VLT	Experiment	Vorhersage von OH-Airglow Bilddaten mit KI-Modellen der Videovorhersage für eine verbesserte ...
DIAMOND	Experiment	Innovative inverse Software-Architekturen für das Design optischer Beschichtungen
ErUM-SESAM	Experiment	Entwicklung innovativer ML-basierter Verfahren zur seismischen Modellierung komplexer Untergründe ...
FASTER	Experiment	Auf dem Weg zu schnellen Feedback-Mechanismen und autonomen Experimenten in der Synchrotron-...
OPTIX	Experiment	Optimale Prozessierung und Training für Intelligentes Experimentieren
DEMOS	Knowledge	Demokratisierung von Modellen: Plattform für den Austausch von Forschungsmodellen
GADC	Knowledge	Aufbau des Deutschen Astronomischen Datenzentrums in Görlitz
PHOTONIC	Knowledge	Zugang zu förderierten wissenschaftlichen Daten der Photonenphysik und deren Visualisierung

Innovation: Domain Knowledge and AI



Science domain knowledge:

Know-how modern methods:



Often: Adapt Computer Science Methods, e.g. Deep Learning

Welcome to ErUM-Data:

DIG-UM & ErUM-Data-Hub Activities & Support Measures

17:00	Welcome (& About today)	<i>Martin Erdmann et al.</i>
	Online	16:30 - 16:40
	Introduction: DIG-UM	<i>Thomas Kuhr</i>
	Online	16:40 - 16:55
	Introduction: ErUM-Data-Hub & Support Measures	<i>Angela Warkentin</i>
	Online	16:55 - 17:10
	Project Introductions	
18:00	Online	17:10 - 17:30
	Short break	
	Online	17:30 - 17:35
	Project Introductions	
	Online	17:35 - 17:55
	Questions & Farewell	
	Online	17:55 - 18:00

All Info & Slides:

<https://indico.desy.de/event/50044/>



ErUM-Data-Hub

The Central Networking and Transfer Office
for Digital Transformation in Research on
Universe and Matter

25.11.2025

ErUM-Data Onboarding Meeting

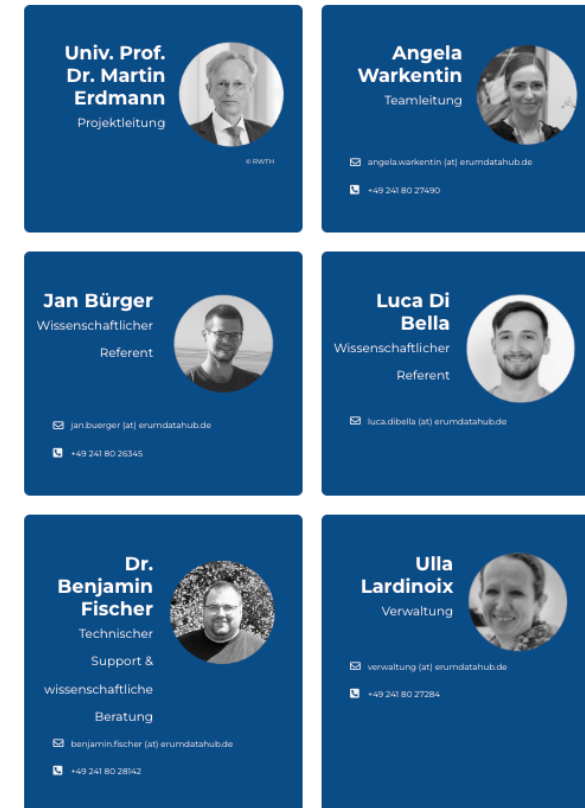
Martin Erdmann, Jan Bürger, Luca Di Bella, Benjamin Fischer,
Ulla Lardinoix, Angela Warkentin



ErUM-Data-Hub: Digital Knowledge Agent for ErUM-Data

Based in Aachen and working close to the community:

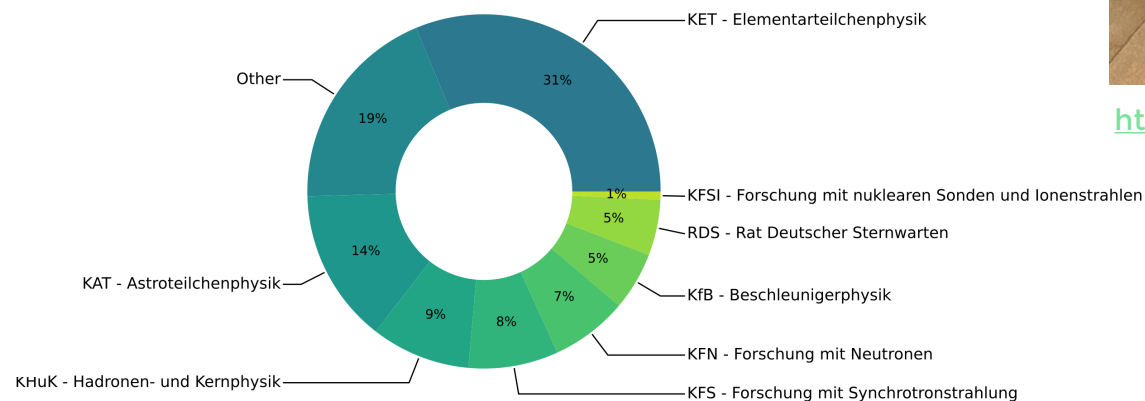
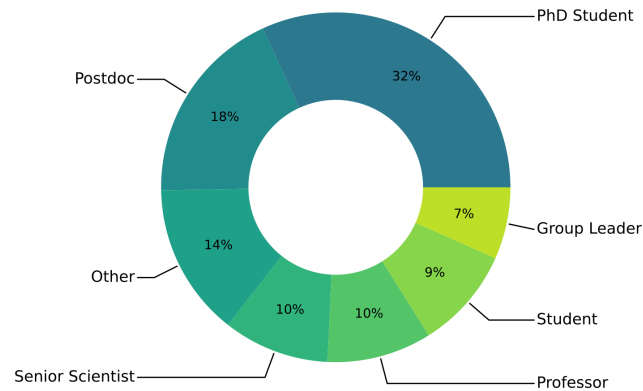
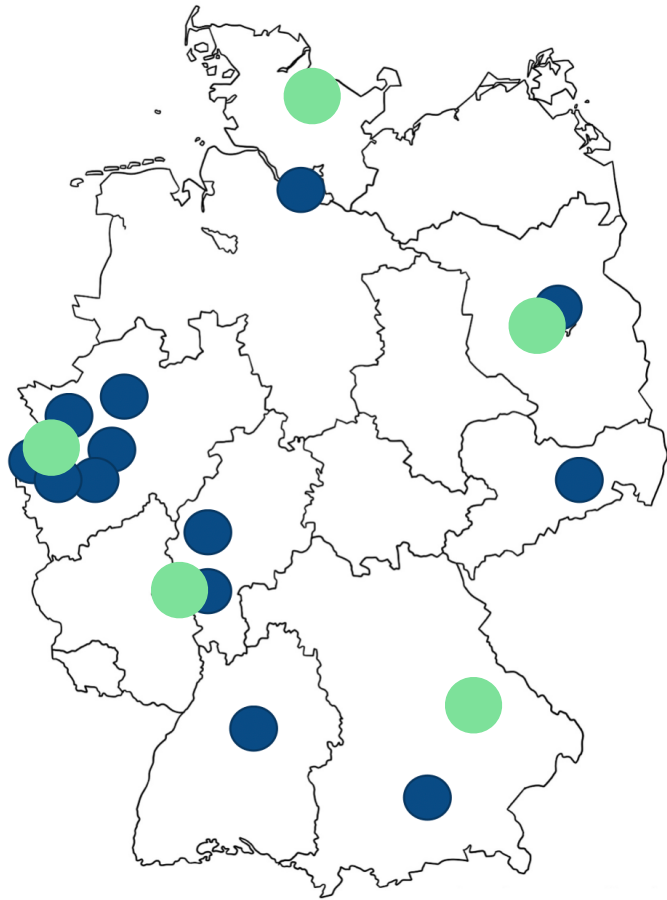
- Advancing digital transformation in basic research
- Enabling networking between ErUM communities
- Identifying and exploiting synergies in ErUM-Data
- Communicating research results to specific target groups
- Transferring knowledge and innovation



erumdatahub.de



Disseminating digital competencies to a broad ErUM audience: 1400 ErUM-Scientists reached in person since 2022



<https://erumdatahub.de/veranstaltungen/>

ErUM-Data-Hub Support Measures:

- **Hosting your website:**

- e.g. <https://fidium.erumdatahub.de/> , <https://susfecit.erumdatahub.de/>
- Write to benjamin.fischer@erumdatahub.de to get a domain, wordpress access & technical support
- Building the website and content is up to you

- **Indico for your events & meetings:**

- Write to angela.warkentin@erumdatahub.de for a subcategory with management rights

- **Organisational event support & event package:**

- <https://erumdatahub.de/event-support/>

- **Reach the ErUM-Data Community:**

- DIG-UM Mailinglists: <https://wiki.erumdatahub.de/bin/view/DIG-UM/MailingLists/>
- Outreach Network (all ErUM-Communities)
- Be featured on our Social Media Accounts

- **Training for your staff / transfer workshops:**

- <https://erumdatahub.de/veranstaltungen/>

ErUM-Data-Hub Support Measures:

- ErUM-Data Knowledge Database

- <https://wiki.erumdatahub.de/bin/view/Main/>

- Job Postings

- Event Calender

- People in ErUM (filter by tags)

- Info & Documentation (e.g. funded ErUM-Data Projects)

- (Over 300 Materials for Teaching & Training)

Interactive: You are invited to use & contribute!

The screenshot displays the ErUM-Data-Hub website interface. The top navigation bar includes a search bar and a 'People in ErUM-Data' link. The main content area is divided into two sections: 'People in ErUM-Data' and 'Jobs in ErUM-Data'.

People in ErUM-Data

This section shows a collection of various research groups and projects in ErUM-Data. It includes a search bar and a list of tags for filtering. The list of people is displayed in a table with columns for Full Name and Affiliation, Community, Experiment, Tags, Cooperation, and Last Updated. The table is filtered by 'Heavy-ion Physics, QCD' and 'Experienced in ...'.

Full Name and Affiliation	Community	Experiment	Tags	Cooperation	Last Updated	Actions
Dynamical Evolution of Heavy-Ion Reactions? Working group lead by Hannah Elmer Theoretical Nucleus Physics GSI/Göthe University Darmstadt/Frankfurt			Heavy-ion Physics, QCD	Experienced in ...	9.2025	View
Decentralized global research group focussed on AI safety and Collective Intelligence? RDS - Rat deutscher Sternwarten? KHUK - Komitee Hadronen- und Kernphysik? Arbeitsgruppe Klassen? Theoretische Kern-, Teilchen- und Astroteilchenphysik Institut für Theoretische Physik Universität Münster	RDS		outreach	-	6.2025	View
			outreach	-	6.2025	View
			BSM, QCD	-	6.2025	View

Jobs in ErUM-Data

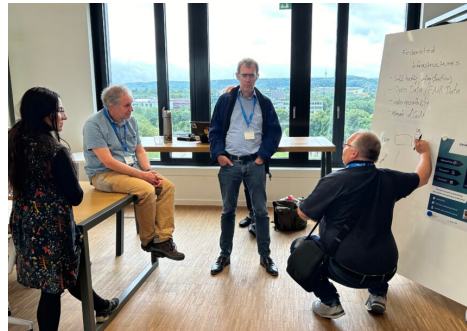
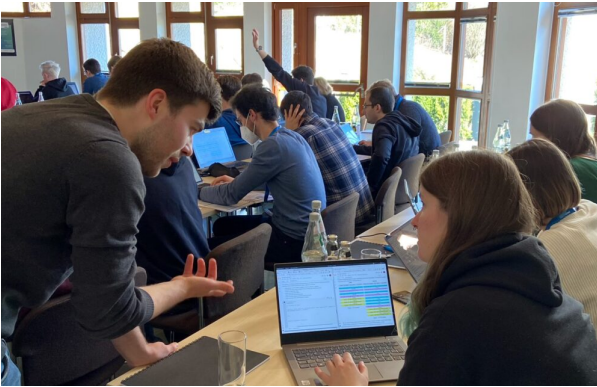
This section shows a list of job postings. It includes a search bar and a list of tags for filtering. The list of jobs is displayed in a table with columns for Title, Location, Community, Tags, ErUM-Data Relation, Valid Until, and Last Updated. The table is filtered by 'Leibniz-Institut für Astrophysik Potsdam (AP)' and 'AI, Agents, Assistants, LLM, PhysicalLLM'.

Title	Location	Community	Tags	ErUM-Data Relation	Valid Until	Last Updated
Postdoc on LLM-based Agentic Systems for Scientific Workflows?	Leibniz-Institut für Astrophysik Potsdam (AP)		AI, Agents, Assistants, LLM, PhysicalLLM	RDM	1.3.2026	6.11.2025
IT System Architect and Data manager?	University of Cologne (ITCC and PH)	RDS	CCAT, Data Center, Data Management, HPC, Process Optimization	FDI, BDA, RDM, UI	16.10.2025	22.9.2025
Postdoc Spectroscopy?	Zeuthen / remote	KHUK	HCI, ions, laser, spectroscopy	BDA	31.10.2026	5.9.2025
PhD student for the ATLAS Group?	Hamburg	KET	ATLAS, machine learning, python	BDA	N/A	16.6.2025
Postdoc for a networked atomic clock experiment for ultralight dark matter?	Zeuthen / remote	KAT	CQTA, atomic clock, dark matter, experimental physics, laser	BDA	N/A	16.6.2025
DESY-Fellowships in Photon Science?	Hamburg	KFS	FLASH, PETRA III, laser, photon	BDA	N/A	16.6.2025

How-To Add/Update Entries

You need to be logged in to perform any modifications.

Digital transformation - together: Looking forward to work with & for you!



**Your Central Networking and Transfer
Office for Digital Transformation
in Research on Universe and Matter**



<https://erumdatahub.de/kontakt/>

+49 241 8027490



Thank you for joining!

We wish you a successful project start!

- **Don't forget:**

- DIG-UM Topic Groups & Mailinglists: [https://wiki.erumdatahub.de/bin/view/DIG-UM/Mailing Lists/](https://wiki.erumdatahub.de/bin/view/DIG-UM/Mailing+Lists/)
 - e.g. Big Data Analytics Meeting (15.01.26, 4pm)
- Annual Meeting (Online & in Aachen): <https://indico.desy.de/event/47414/>
 - (All events: <https://indico.desy.de/category/984/>)
- Interactive ErUM-Data Knowledge Database: <https://wiki.erumdatahub.de/bin/view/Main/>
- ErUM-Data-Hub Support & Contact: erumdatahub.de
 - Website hosting, event support, etc.