

DERSE25 KARLSRUHE

Research Software

A Critical Ingredient Across Diverse Funding Models and Disciplines

KRISTINE SCHIMA-VOIGT, ZEKI MUSTAFA DOĞAN, INGO PFENNIGSTORF

about us

A large [agile team](#) in a [scientific library](#)

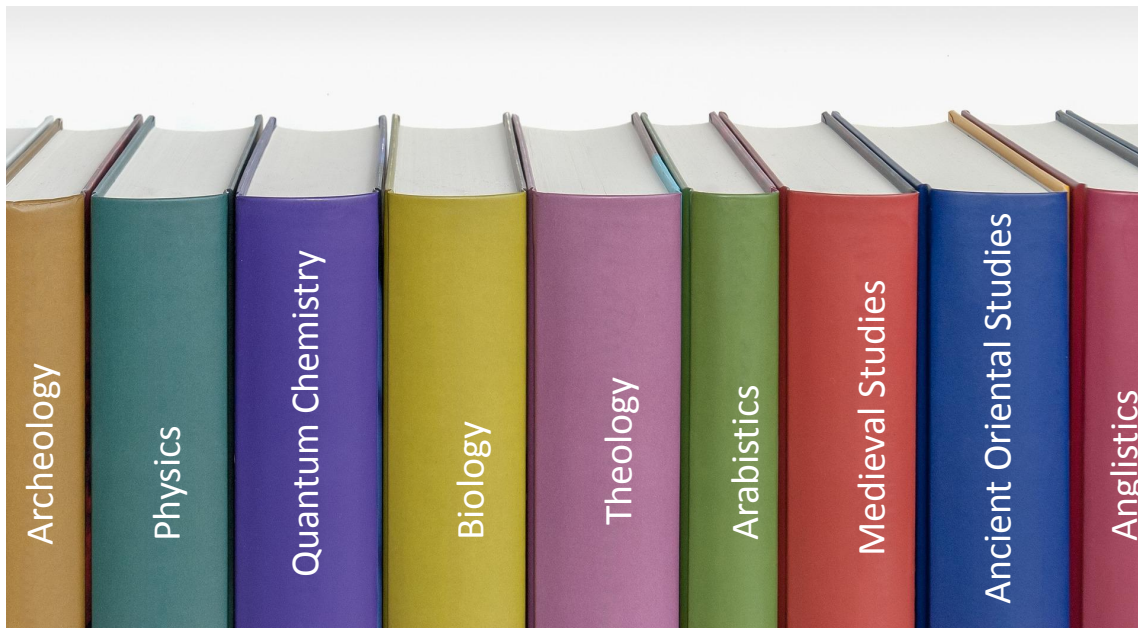
We offer [RSE as a service](#)

We are aiming for the right [balance between tailored and generic solutions](#)

DALL-E



About 30 projects/ cooperations each year



The integration and funding of RSEs within various funding models often is a

Challenge



DALL-E

Three Funding Models as Case Studies

Research Units (FOR), Research Training Groups (RTG), and Collaborative Research Centers (CRC)

Funding Model: Research Unit (FOR)

Aspect	Research Unit (FOR)	Research Training Group (RTG)	Collaborative Research Center (CRC)
Duration	Up to 6 years	Up to 9 years	Up to 12 years
Focus	Specific research topic	Training of doctoral candidates	Long-term, interdisciplinary research
Scope	5–10 projects	10–15 doctoral research projects	10–20 or more subprojects
Goal	Establishment of new research directions	Structured doctoral education	Innovative, complex research projects
Interdisciplinarity	Possible, but not mandatory	Possible, but not mandatory	Strongly interdisciplinary
Structural Formation	Flexible design of the research network	Focus on early-career support	Strong institutional focus
Institutional Integration	Local or regional	Local, at one university	Local or regional (for Transregional CRC)

Research Unit FOR 2064 STRATA - Stratification Analyses of Mythic Narrative Materials and Texts in Ancient Cultures

Challenge

RSE outsourced as agency contract with requirements document



DALL-E

FOR STRATA Hyleme Database

Hylemsequenz #243

- Mythen
- Quellen
- Hylemsequenzen
- Hyleme
- Subjekte
- Prädikate
- Objekte
- Hylem-Typen
- Fundorte
- Objekt-Typen
- Advanced Search
- Data Comparison

Kontext

Bezeichnung
nin me šara

Quellen

Mythen

Bearbeiter*in
publ A.Zgoll in Powerful Women in the Ancient World, 13-56

Hyleme / Textlücken / Überschriften

☒ Chronologische Reihenfolge

Orpheus ist der geliebte Sohn des Oiagros.

Argiope ist Thrakerin.

Argiope ist im Hades.

Orpheus wappnet sich mit seiner Kithara.

Orpheus segelt zu Charon.

Orpheus reist allein am Ufer entlang.

Orpheus spielt auf seiner Kithara.

Orpheus gewinnt verschiedene Götter für sich.

Argiope bekommt zarten Lebensatem.

Orpheus widersteht dem Blick des furchtbaren Kerberos.

Orpheus stimmt die großen Herrscher (der Unterwelt) mit Gesang um.

Orpheus bringt Argiope aus dem Hades herauf.

☐ Erzählreihenfolge

Orpheus ist der geliebte Sohn des Oiagros.

Argiope ist Thrakerin.

Argiope ist im Hades.

Orpheus wappnet sich mit seiner Kithara.

Orpheus segelt zu Charon.

Orpheus reist allein am Ufer entlang.

Orpheus spielt auf seiner Kithara.

Orpheus gewinnt verschiedene Götter für sich.

Orpheus widersteht dem Blick des furchtbaren Kerberos.

Argiope bekommt zarten Lebensatem.

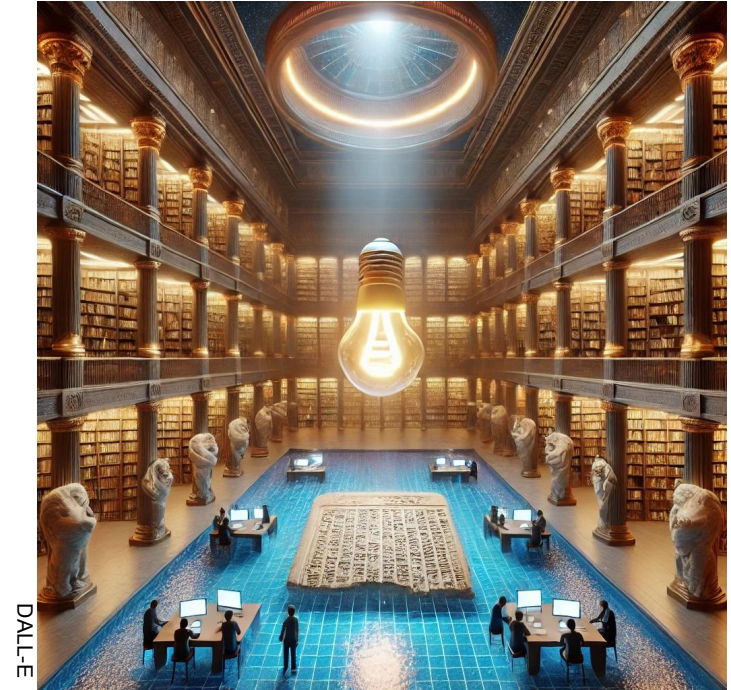
Orpheus stimmt die großen Herrscher (der Unterwelt) mit Gesang um.

Orpheus bringt Argiope aus dem Hades herauf.

Research Unit FOR 2064 STRATA

Lessons Learned

- Close integration into scientific workflows
- Field-Specific Expertise on standards, tools, and infrastructures
- Sustainable Solutions that are compatible and reusable
- Agile over Waterfall: Flexibility for better outcomes



DALL-E

Funding Model: Research Training Group (RTG)

Aspect	Research Unit (FOR)	Research Training Group (RTG)	Collaborative Research Center (CRC)
Duration	Up to 6 years	Up to 9 years	Up to 12 years
Focus	Specific research topic	Training of doctoral candidates	Long-term, interdisciplinary research
Scope	5–10 projects	10–15 doctoral research projects	10–20 or more subprojects
Goal	Establishment of new research directions	Structured doctoral education	Innovative, complex research projects
Interdisciplinarity	Possible, but not mandatory	Possible, but not mandatory	Strongly interdisciplinary
Structural Formation	Flexible design of the research network	Focus on early-career support	Strong institutional focus
Institutional Integration	Local or regional	Local, at one university	Local or regional (for Transregional CRC)

Research Training Group: RTG 2455 BENCh - Benchmark Experiments for Numerical Quantum Chemistry

Challenge

- Primary focus on doctoral training
- Software development often part of student tasks
- Funding for RSE is only possible if "research infrastructure" is insufficient
- RSE often not included in initial planning

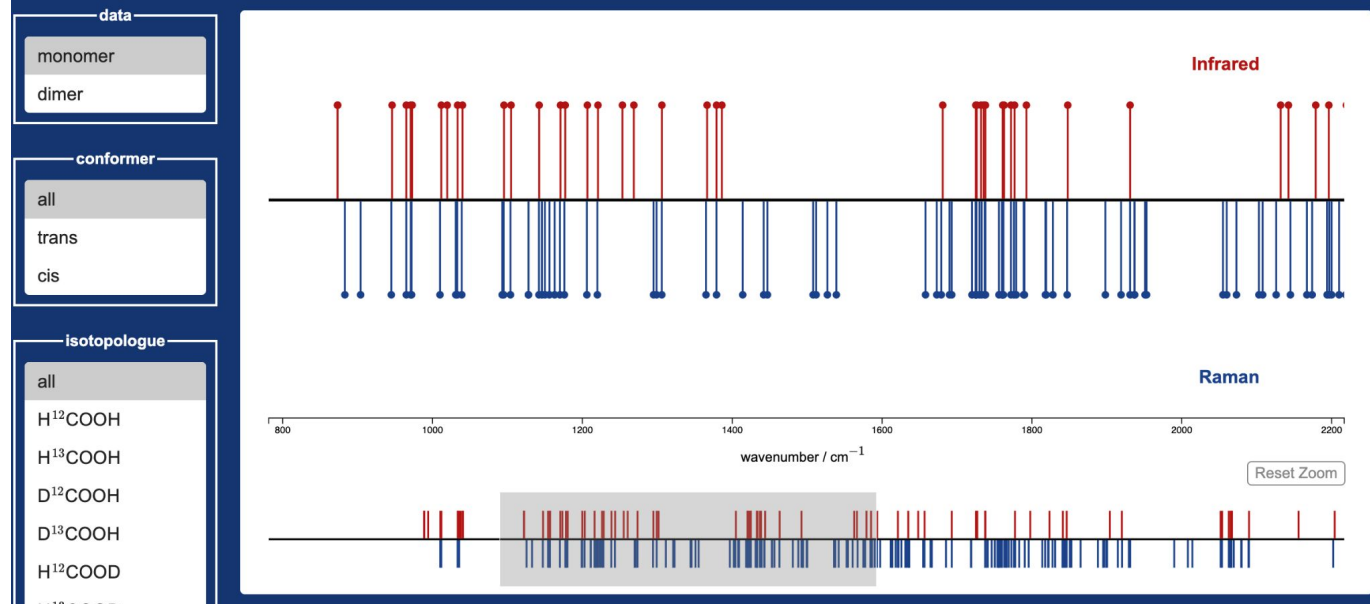


DAL-E

qmbench

challenges for numerical quantum chemistry

Formic Acid Vibrations Library

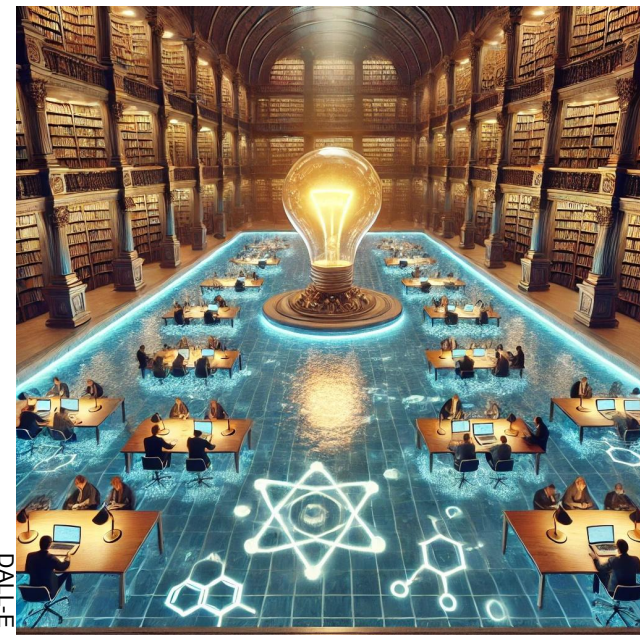


<https://qmbench.net/>

RTG 2455 BENCh - Benchmark Experiments for Numerical Quantum Chemistry

Lessons Learned

- Dedicated RSE support in RTGs empowers researchers to focus on their core objectives
- Enhanced research quality and efficiency is achieved through professional software support
- Sustainable data management ensures long-term accessibility and usability of research data
- Commitment to reproducibility and FAIR principles strengthens scientific integrity and transparency



DALL-E

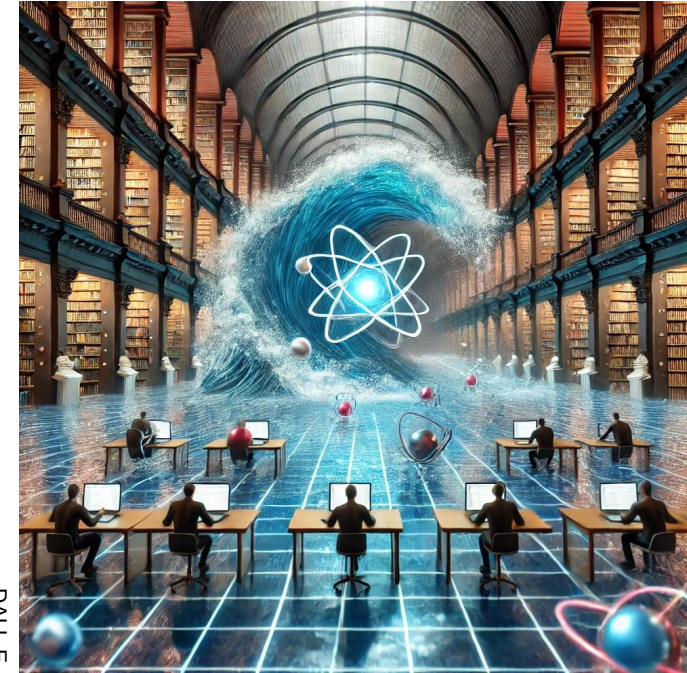
Funding Model: Collaborative Research Centers (CRC)

Aspect	Research Unit (FOR)	Research Training Group (RTG)	Collaborative Research Center (CRC)
Duration	Up to 6 years	Up to 9 years	Up to 12 years
Focus	Specific research topic	Training of doctoral candidates	Long-term, interdisciplinary research
Scope	5–10 projects	10–15 doctoral research projects	10–20 or more subprojects
Goal	Establishment of new research directions	Structured doctoral education	Innovative, complex research projects
Interdisciplinarity	Possible, but not mandatory	Possible, but not mandatory	Strongly interdisciplinary
Structural Formation	Flexible design of the research network	Focus on early-career support	Strong institutional focus
Institutional Integration	Local or regional	Local, at one university	Local or regional (for Transregional CRC)

Collaborative Research Centers: CRC 1633 - Pushing Electrons with Protons

Challenge

- Research infrastructure is often not considered in the long term – the focus is on project-specific RSE funding.
- Each discipline had its own research data practices, leading to fragmentation.
- Structural funding for long-term research infrastructure development was not provided



CRC 1633 - Pushing Electrons with Protons

https://vm18114.virt.gwdg.de/experiments.php?mode=view&id=544

eLabFTW EXPERIMENTS RESOURCES TEAM SEARCH DOCUMENTATION

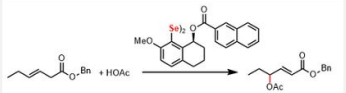
HPP372 CPE in new MeNO₂

Owned by Henner Pesch

Started on 2024-05-28
Team test_AG_Slewert
Category NOT SET
Status RUNNING
Tags CPE Esterification
ID 544

Visibility Only members of the team
Can write Only owner and admins

MAIN TEXT
Calculations



Chemical	M [g/mol]	n [mol]	m [g]
SeI ₂ -Naph	372	0.00001	0.0037
HexBn	204	0.0001	0.0204
MeuS ₂	146	0.0001	0.0146
HOAc	60		1 mL
MeNO ₂	61		2 mL
NBu ₄ PF ₆	387	0.0003	0.116



https://test.data.uni-goettingen.de/dataset.xhtml?persistentId=doi:10.111987/NTBW7W&version=DRAFT

GÖTTINGENRESEARCHONLINE Add Data Search User Guide FAQ Support Jens Nieschulze

The root collection > CRC 1633 >

Info - This draft version needs to be published. When ready for sharing, please publish it so that others can see these changes.

HPP372 CPE in new MeNO₂

Draft Unpublished

Henner Pesch, 2025. "HPP372 CPE in new MeNO₂", <https://hdl.handle.net/21.111987/NTBW7W>. The root collection. DRAFT VERSION

Cite Dataset - Learn about Data Citation Standards

Access Dataset -
Publish Dataset
Edit Dataset -
Contact Owner Share

Dataset Metrics
0 Downloads

Description Exported experimental data from eLabFTW for Experiment <https://vm18114.virt.gwdg.de/experiments.php?mode=view&id=544>

Subject Chemistry
License/Data Use Agreement Custom Dataset Terms

Files Metadata Terms Versions

GÖTTINGENRESEARCHONLINE
DATA

Add + Edit Metadata

Citation Metadata

Persistent Identifier hdl:21.111987/NTBW7W
Title HPP372 CPE in new MeNO₂
Subtitle test
Author Henner Pesch
Description Exported experimental data from eLabFTW for Experiment <https://vm18114.virt.gwdg.de/experiments.php?mode=view&id=544>
Subject Chemistry

CRC 1633 Metadata

Responsible Subproject A01

CRC 1633 - Pushing Electrons with Protons

Lessons Learned

- Interdisciplinary software integration requires early standardization
- The role of institutional RSE support is critical for sustainability
- FAIR principles require active implementation
- Research software sustainability must extend beyond CRCs
- Research data management (RDM) and research software engineering needs to be considered at the proposal stage



Summary

Aspect	Research Unit (FOR)	Research Training Group (RTG)	Collaborative Research Center (CRC)
Role of RSEs	Often informal or ad-hoc	PhD candidates develop software as part of their research, often without dedicated RSE support	Can include dedicated RSE positions, but implementation varies
Software Sustainability	Limited—often dependent on individual researchers	Challenging—software development is often tied to PhD projects and may not be maintained long-term	More potential for sustainable software development, but requires structured RSE involvement
Challenges for RSEs	No dedicated funding for RSEs; software often developed as a side task	Lack of formal RSE roles, reliance on temporary contributors (PhDs)	Potential for long-term RSE roles, but recognition and funding are inconsistent

Conclusion & Outlook

Structural Challenge: Lack of sustainable RSE positions leads to inefficiencies and hinders innovation.

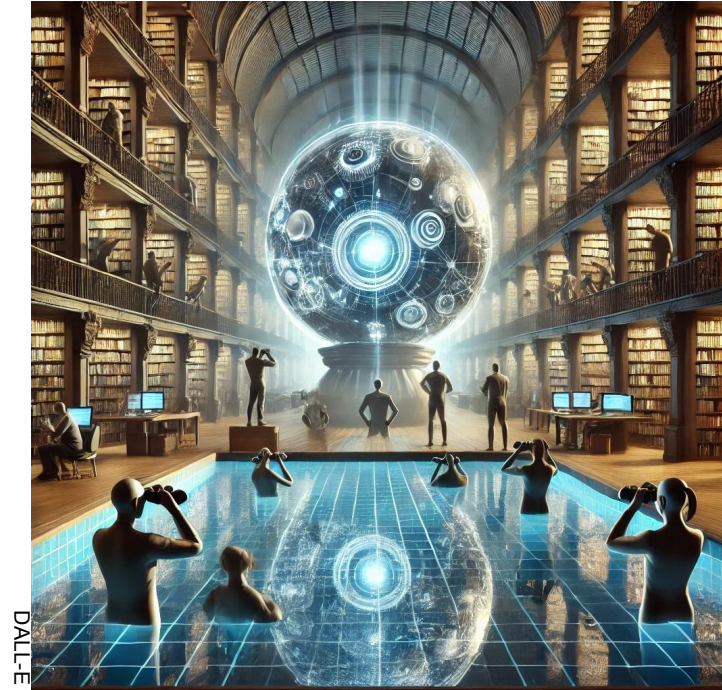
Call for Action: Funding agencies should require RSE planning in research proposals and especially in Research Unit, Research Training Group and Collaborative Research Center Programmes.

Awareness Gap: The issue is not just funding—many researchers underestimate the need for structured RSE support.

Agile Over Waterfall: In RSE projects, agile development approaches almost always prove more effective than rigid waterfall models.

RSE-as-a-Service: By offering RSE-aaS, we enable cross-disciplinary synergies by identifying reusable algorithms, data modeling approaches, and methodologies across different research domains.

Long-Term Vision: Establish RSE as a recognized profession and/or service with stable funding.



DAL-E

More from the SUB Development Team

Exploring the TIDO Viewer: A Generic, Interactive, and Research-Driven Solution for Digital Texts and Objects (Poster & Demo)

Paul Pestov, Orlin Malkja,
Feb 26, 2024, 18:00 PM

Strengthening the Traceability and Transparency of the Software Development and Management Lifecycle Using Knowledge Pool (Poster & Demo)

Oguzhan Büyüç
Feb 26, 2024 18:00 PM

Infrastructures for a community-developed text processing library (Talk)

Florian Barth, Mathias Göbel, Tillmann Dönicke
Feb 27, 2024, 10:00 AM

Thank you!

Kristine Schima-Voigt

Software and Service Development

Digital Library Department

Georg August University Göttingen

Göttingen State and University Library

D-37070 Göttingen

Platz der Göttinger Sieben 1 (Central Library, Room 2.27)

+49 551 39 25184 (Tel.)

schima-voigt@sub.uni-goettingen.de

<http://www.sub.uni-goettingen.de>

