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## Research Software: A Critical Ingredient Across Diverse Funding Models and Disciplines

*Tuesday 25 February 2025 16:20 (20 minutes)*

Research software engineering (RSE) plays a pivotal role in advancing science, yet its integration and funding vary significantly across different research programs and disciplines. In this talk, we will explore how RSE expertise has been crucial in three distinct contexts, revealing the diverse ways funding structures support—or overlook—the critical need for sustainable software development.

**Graduate College (GRK 1422 - Metal Sites in Biomolecules: Structures, Regulation and Mechanisms):** Graduate schools often focus on training the next generation of researchers but rarely provide direct funding for dedicated RSE support. Through our work with quantum chemistry researchers (qmbench.net), we filled a critical gap by developing custom tools that enabled graduate students to engage deeply with their data and build software skills—a need that could be more sustainably addressed with embedded RSE positions.

**Special Research Area (SFB 1633 - Pushing Electrons with Protons):** Large, interdisciplinary programs often have complex technical needs that RSEs are uniquely positioned to address. Our integration of electronic lab notebooks with research data repositories demonstrated how targeted software solutions can optimize workflows and enhance collaboration across subprojects. However, dedicated RSE funding in SFBs remains inconsistent, often relying on temporary, project-based support.

**Research Group (FOR 2064 STRATA - Stratification Analyses of Mythic Narrative Materials and Texts in Ancient Cultures):** Smaller, highly specialized research groups face unique challenges, often requiring bespoke software like Hyleme (the smallest plot-carrying unit of a narrative material) for data modeling and input. These groups typically lack the financial flexibility to hire RSEs, even though the impact of tailored software is profound.

These examples not only highlight the transformative role of RSEs in diverse contexts but also underscore a broader systemic issue: the need for explicit and sustainable RSE funding across all program types. By embedding RSE expertise within these programs from the outset, we can ensure long-term impact, foster innovation, and provide the foundational support researchers need to focus on discovery.

### I want to participate in the youngRSE prize

no

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