

Call for MATH+ projects in the Application Areas, Emerging Fields, and the Transfer Unit

0. Preamble

The project-oriented research of MATH+ aims at “Relevant Innovation in Application-Oriented Mathematics” with the overarching objective of “Transforming the World Through Mathematics”. MATH+ will pursue this ambitious goal by funding projects that

- 1) extend the scope of traditional research in modeling, simulation and optimization by embracing data-driven approaches and models,
- 2) lead to new applications via innovative approaches in new and existing application fields,
- 3) progress theory by advancing fundamental mathematics or build new bridges within mathematics,

and thus, result in sustained impact of mathematics on other scientific disciplines, industry, and society.

This call aims, in particular, at consolidating and further focusing the research that has been started in 2019 in the Application Areas (AAs), Emerging Fields (EFs), and the Transfer Unit (TrU). It is therefore expected that project proposals fit into these research units’ substantive focus given on the MATH+ webpage as well as in the supporting documents to this call.

1. Available funding

Funding is available in two categories:

- A) Full positions (100% E13) for 2 years,
- B) 75% positions (E13) for 3 years (for projects in AAs and EFs only).

Possible starting dates are 1 January 2021 or 1 April 2021. Please indicate when you plan to start the project. Postdocs or doctoral researchers can be funded in either category. Applications are possible for one position or, in exceptional cases, for at most two (see also 3. *Selection criteria* below).

Applicants must indicate for which AA (AA1-4) or EF (EF1-5) the project is proposed, or alternatively indicate that the project is proposed for the TrU.

In case a doctoral researcher is to be selected for a position in the project, applicants must indicate which PI will act as authorized PhD-supervisor.

If a doctoral researcher is to be selected for a category A position, the applicants are required to declare explicitly that they will fund the third year or remaining time until the completion of the doctorate without further support of MATH+ (“Verpflichtungserklärung”).

Where applicable, project proposals should outline which kind of additional research staff is available from core support. Such core support is not a strict must, but definitely a plus.

2. Eligibility

Project applications can either have a mathematics-based or interdisciplinary team of Principle Investigators (PIs). All PIs must fulfill the minimum qualification for project applications in MATH+, i.e., habilitation-equivalent scientific achievements. At least one of the PIs must be employed at one of the five mathematics institutes in Berlin (at FU, HU, TU, WIAS, or ZIB). If funding for more than one position is requested, the project proposal has to outline an individual work plan for each position.

Furthermore, the project staff funded via MATH+ must be employed at one of the five mathematics institutes, even if the specific work plan for that staff member primarily refers to the non-mathematical part of the project.

This call targets proposals of new projects that have not previously been funded by MATH+. Application for extensions of projects started in the previous round are, however, possible in exceptional cases (see 3. *Selection criteria* below).

3. Selection criteria

For **new** project proposals in **Application Areas AA1-AA4, and Emerging Fields EF1-EF5**:

Required:

- Mathematical excellence:
Innovative mathematical research ideas with specifically relevant preparatory work and with the prospect of a high future impact on (application-oriented) mathematics, ideally opening new horizons; high impact presentations at scientific conferences etc.);
- Relevance for MATH+ and the respective AA or EF:
In what way will the proposed project contribute to the goals of MATH+ and the respective AA/EF? Please refer to the goals in the preamble and the enclosed descriptions of the AA/EF and position your proposed project clearly.
- Relevance for applications in the respective AA or EF:
Either clearly recognizable direct interdisciplinary application perspectives or ground-breaking theoretical research with high relevance for applications.
- Cooperation and links to other projects in MATH+.

Desired:

- Interdisciplinary or cross-institutional project teams,
- Cooperation beyond MATH+.

For **new** project proposals in the **Transfer Unit**:

Required:

- Transfer of innovative concepts or results from basic research in mathematics into practice by developing prototypes or demonstrators, etc.,
- Available cooperation partners from the private sector to fund an associated research project with complementary research and transfer objectives:

The project application has to contain a letter of intent signed by the private partner in which topics, goals, and intended funding of the associated project are detailed; the amount of funding has to match the funding requested from MATH+.

- **Relevance for MATH+:**
 In what way will the proposed project contribute to the goals of MATH+? Please refer to the goals in the preamble and position your proposed project clearly.
- **Cooperation and links to other projects in MATH+.**

Desired:

- Stimulation of new basic research in mathematics.

Beyond these criteria, it is furthermore desired that projects in AAs, EFs, and the TrU plan to attract additional funding, and contribute to research training, gender equality, complementary skills as well as to the general visibility of MATH+, e.g., via specific outreach activities.

For **extension** proposals in **Application Areas**, **Emerging Fields**, and the **Transfer Unit**:

In addition to the selection criteria for new proposals outlined above, proposals for extension of a previously funded project need to

- prove that the project is a cornerstone of the respective AA/EF by outstanding publications, or other groundbreaking research results,
- prove their exceptionally high scientific output,
- argue that an extension will be more beneficiary than a new project.

4. Format

The provided LaTeX-templates must be used for all project proposals. Please follow **all** guidelines given in the templates, including comments only visible in the tex-file. The length of a proposal is limited to 4 pages (8 pages, in the exceptional case that you apply for two positions).