

Call

Fellowships ‘Computational Sciences’

Deadline

annually October 15

Contact

**Natural and Engineering
Sciences, Medicine**

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1. Objectives

The **funding initiative “New Conceptual Approaches to Modeling and Simulation of Complex Systems”** aims at mathematical modeling and computer simulations advancing a better understanding of complex systems. On the one hand the Foundation supports junior researchers, on the other hand it wants to enhance cooperation among theory, modeling, and simulation. To this end alternating topical calls for research projects are offered. The initiative addresses suitably qualified theoreticians from all scientific disciplines. Within the funding initiative workshops and summer schools according to the Foundation’s modalities (see ‘Information for Applicants 1’) are also possible. Furthermore, the Foundation considers itself as facilitator for innovative funding schemes in the area of modeling complex systems and welcomes inquiries in this regard.

Here, complexity is attributed to systems which consist of a large number of elements and which cannot be adequately described by studying their constituents. Characteristic features of such systems are the competition between autonomy and integration of the constituting elements, emergent phenomena across different hierarchical levels, and adaptation in response to the environment. In this context, the funding initiative aims at concepts which are systematically improvable and can be applied to broad classes of problems.

The Foundation intends to **support early career researchers** and grants fellowships each year as described below. There are no specifications regarding the choice of the complex system. Hence, fellowships addressing subjects beyond the previous topical calls on “Extreme events: Modeling, analysis, and prediction”, “Complex networks as a phenomenon across disciplines” and “Computer simulation of molecular and cellular biosystems as well as complex soft matter” are welcome.

2. Funding

The **Fellowships ‘Computational Sciences’** refer to research projects conceived by junior scientists and dealing with the theory, modeling, and computer simulation of any complex system. The funding scheme aims at

highly talented young scientists, who have already demonstrated their qualification by previous excellent performance.

The **target group** is postdoctoral researchers shortly after the Ph. D. in any theoretical or computer-based discipline. At the time of application the dissertation need not be fully completed. 'Discipline-hoppers' with a solid background in complex systems research or mathematical modeling are encouraged to apply if they plan to transfer their knowledge into a more applied field. Applications for funding of research leading to a Ph. D. are accepted only as an exception, e. g. when a candidate's scientific standing and excellent quality of his/her work can be documented with outstanding publications, scientific prizes or similar achievements.

The Fellowship enables the applicant to **relocate to a laboratory best suited to pursue the proposed research**. The host group may be at a university institute or another publicly-maintained research institution. Applications are accepted under the condition that the applicant has either not or only recently (not more than six months ago) moved to the chosen laboratory. Further, the Foundation expects that the applicant has access to the research infrastructure of the host institute. It is possible to apply for short or longer (one to two year) research stays at a foreign institute in course of the fellowship. However, the Foundation requires that the last year will be spent at an institute in Germany. When a stay abroad is supported the funds for the last year are released only after the return to Germany.

Applicants have the option to design a joint project with another postdoctoral researcher and, hence, to apply for two fellowships. In these cases the Foundation requires that both candidates are highly qualified and have complementary skills. The cooperative research project should benefit from the differing expertise of the applicants. Interdisciplinary projects are desirable. Ideally both work places are close-by, however, the applicants are not required to work at the same institute. Again, a change of the scientific environment with the project start is required. Additionally, applicants can apply for one graduate student position to complement the fellowship. A project-based substantiation for the necessity to employ a Ph. D. student is requested. Please include the name(s) of potential candidates for this position. Supervision of the dissertation and his/her participation in existing graduate programs should be arranged prior to an application.

In any case, the **work plan** of the fellow should have its main focus on new conceptual methods to modeling and simulation of complex systems. The research project may last for two to three years. A conclusive explanation regarding the complexity of the investigated system is considered of importance. The simulation results should be connected to experimental or empirical findings. Available real data should be employed since funding of experimental sub-projects is beyond the focus of this initiative. However, if indispensable, the determination of missing data is acceptable at a limited scale to allow for the validation of the simulation results.

Funding always includes the salary of the postdoctoral fellow – either as a temporary position or as a scholarship depending on the individual

circumstances. Further, you may apply for partial child care costs, supplies, travel expenses and small equipment items. The term of a fellowship can last two to three years. A supporting statement of the host institution(s) is requested at the time of application.

The Foundation strives to improve the compatibility of family and professional career and thus provides a “dual career-option” for couples with children. Hence, an accompanying partner working in academia may submit his/her own application with affiliation to a scientific institute at the fellow’s location. As a matter of course, applications from all disciplines are eligible. The Foundation takes its decision based on peer-review. However, a grant is only possible in conjunction with an awarded fellowship “Computational Sciences”. The partner can apply for his/her salary and limited non-personnel costs. The duration of the partner’s project may not exceed the fellowship. Please include in your CV the date of birth of your children.

3. How to apply and check-list

Electronic application

Please use the Foundation’s electronic application system portal.volkswagenstiftung.de in the internet. Please remind to print the cover sheet provided, sign it and send it to us!

In view of the international peer review only applications **in English** are accepted. Deadline is on October 15 each year. The application has to be submitted using the Foundation’s electronic application system. The following data and documents (pdf files) are requested:

- Filled-in electronic forms regarding applicant data, grant recipient (German host laboratory), brief title, costs, and legal statement
- Description of the research topic including objectives and justification, expected results with regard to the international state of the art, methods and implementation, work plan with time schedule, rationale for the choice of the host laboratory, references (10 to 12 numbered pages approx.; minimum 11pt font and 2 cm page margins)
- Scientific curriculum vitae with publication list
- Copy of the PhD certificate (or preliminary confirmation)
- Statement of the host institution(s)

The Foundation requires that the application is written by the prospective fellow him-/herself and asks for a confirming signature. Further, the Foundation must be informed if the same or a similar application is pending or will be submitted to another funding institution. The Volkswagen Foundation can award grants to scientific institutions only. Applicants outside of universities and well-known publicly-maintained research institutions are asked to provide details on the legal status, statutes, trustees and boards, charitable/non-profit status, budgeting and auditing of the institution to be funded.