

Project Description - Coordination Funds Priority Programme 2171

Dynamical Wetting of Flexible, Adaptive and Switchable Surfaces

First funding period (2019-2022)

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1 Aims and objectives of the Priority Programme

Wetting and dewetting, i.e., the respective advancing and receding motion of liquids on surfaces is one of the fascinating everyday phenomena of the natural and technical world that surrounds us. Surfaces that dewet well are essential for many plants and animals, as water drops very quickly roll off. With the increasing miniaturisation of technical fluidic systems, the control of wettability is becoming increasingly important, as at small length scales interfacial effects dominate.

The Priority Programme (SPP) 2171 shall develop the basic physical understanding of dynamic wetting and dewetting processes on flexible, adaptive and switchable surfaces. Thereby, flexible surfaces are deformed by the liquid and thus provide a feedback mechanism on the static and dynamic behaviour of the liquid. Adaptive surfaces change

their physico-chemical properties in the presence of a liquid, e.g., under a drop, or they adapt their wetting behaviour to environmental conditions. Switchable surfaces can repeatedly and almost instantaneously change their surface energy or topography in response to external influences, thereby, e.g., enabling periodic wetting dynamics. Switching processes can, e.g., be triggered by electric fields or light irradiation.

In all three cases – flexible, adaptive and switchable surfaces – the substrate dynamics couples to the hydrodynamics in the wetting liquid and provides additional time and length scales. The SPP shall mainly focus on the dynamics of (de)wetting of simple, low-molecular-weight liquids. Beside this it shall consider mixtures of simple liquids, diluted suspensions and surfactant solutions in situations where their (de)wetting dynamics is altered by substrate- or interface-induced internal structuring. This in turn, may influence the substrate dynamics.

Such a coupling of different non-equilibrium processes has a significant influence on the mechanisms of energy dissipation which ultimately determine the overall dynamics. The resulting additional degrees of freedom offer new possibilities for a future targeted control of dynamic wetting processes, but also pose new challenges for experimental investigation and theoretical description.

The highly cooperative and interdisciplinary SPP is based on the very good local state of knowledge on the wetting of homogeneous, solid and inert substrates, as well as on the rapid advance in length scale-bridging experimental and theoretical methods. The SPP shall establish the prerequisites for a future control of dynamic wetting processes.

The Coordination Funds shall provide the means for realising our interdisciplinary priority programme in a coherent manner. Further, it shall allow all participating projects and researchers to further develop their collaborations and share their results within and beyond the SPP. The main measures, whose realisation shall be funded through the Coordination Funds are:

1. Organisation of the scientific exchange *between* the individual projects;
2. Support of the training of junior researchers through central events, by promoting individual exchanges, and through local training events that are open to other SPP groups;
3. Development of a structured collection of hands-on knowledge (tutorials, etc.) that fosters interdisciplinary cooperation and lowers entry thresholds for junior researchers and students;
4. Organisation of the presentation of the scientific results of the SPP to the international scientific community and the general public;
5. Administration of the support for junior researchers within the SPP;
6. Management of measures for family-friendliness and gender equality within the SPP.

Summary of requested funds

Module	Personnel	Direct Costs	Purpose
2.1 Coordination	50% WMA TVL-13/14 10% Secretary (TVL-8) 19 512€	4 760€ 1 500€	SPP-Manager Secretarial support Technical support (10 hr/wk SHB) Travel of SPP-Manager Travel of coordinator
2.1 Sum	19 512€ + TVLs	6 260€	
2.2 Network Funds	50% WMA TVL-13/14 10% Secretary (TVL-8) 19 512€	4 760€ 56 000€ 45 000€	Knowledge Manager Secretarial support Technical support (10 hr/wk SHB) Travel of Knowledge Manager PhD student exchange Visiting Researcher
2.2 Sum	19 512€ + TVLs	105 760€	
2.3 Start-up Funding		27 900€	Grant exploration visits
2.3 Sum		27 900€	
2.4 Gender equality		11 500€ 5 000€ 2 000€ 8 400€ 6 504 €	Childcare at events Local childcare Special dependencies Career workshops Parental leave support (3.3 hr/wk SHB)
2.4 Sum		33 404€	
2.6 Project-Specific Workshops		11 300€ 9 230€ 23 360€ 26 500€	Advanced school PhD student workshop Internal workshops International conference
2.6 Sum		70 390€	
2.8 Public relations		4 500€ 1 200€	Public evening lectures Video contest
2.8 Sum		5 700€	
Total	39 024€ 100% WMA TVL-13/14 20% Secretary TVL-8	249 414€	

2 Requested modules/funds

2.1 Coordination Module

2.1.1 SPP Manager

To fulfil the management tasks associated with the coordination of the SPP, we request a 50% WMA TVL-13/14 position* for an **SPP Manager**, as well as a 10% secretarial position for secretarial support and a 10 hours per week student assistant position (SHB) for technical support (the latter amounts **in total to 19512€**). The tasks that have to be performed support and ensure the internal organisation, administration and communication, as well as support the external representation of the SPP and thus go far beyond common secretarial tasks. To allow for an efficient interaction with the individual participating groups, the SPP manager should be familiar with the wider scientific field of the SPP. Ideally, (s)he should be a junior researcher with a doctoral degree who is familiar with the field and capable of efficiently supporting existing and initiating new interactions between the members.

In detail, the tasks of the SPP manager are:

- Administration of the ‘membership’ in the SPP, in order to ensure an efficient communication infrastructure: Maintenance of the current list of projects funded by the DFG within the SPP2171, and of a differentiated list of all groups and researchers associated to the SPP; Preparation and management of the association of new groups and projects to the SPP; Establishment and maintenance of global and differentiated mailing lists (following present EU data protection standards).
- Support of the external representation of scientific results; collection and management of related activities of member groups; bundled presentation and linking of all SPP publications: Conference contributions, publications in scientific journals, theses.
- Collecting information for an internal SPP newsletter, creation and distribution of the same. The newsletter fosters a regular exchange about SPP-related publications, conferences, jobs and exchange offers.
- Organisation of all scientific events of the SPP and administration of respective finances (2 workshops, 1 international conference, 1 summer school, 1 doctoral student workshop, see sec. 2.6)
- Administration of the application procedure and finances for the scholarships allowing junior researchers not financed via the SPP to attend SPP events (see sec. 2.6).
- Promotion of the exchange between different groups within the SPP that are working on *different* projects. All junior researchers shall be motivated to work for a few weeks in a complementary groups (information about funding, administration of application procedure and finances, see sec. 2.2.2).

*DFG flat rate E 13 level 3 to E 14 level 2

- Support of the international networking of both, junior and senior SPP researchers, by implementing the measures that will embed the SPP research activities into the international scientific system. This includes, in particular, the administration of the application procedure and finances for visiting researchers (see sec. 2.2.3).
- Implementation and further development of our gender equality concept and administration of corresponding financial resources (see 2.4).
- Implementation of the measures related to start-up funding (see 2.3). In particular, administrate application procedure and finances for the incoming and outgoing kick-off visits. Inform potentially interested parties about the funding possibility.
- Establishment of a digital communication platform ('RocketChat', an OpenSource alternative to 'Slack' hosted in Germany via GWDG), through which all researchers can exchange SPP related information at any time. In this way, the competences available in the SPP can be accessed quickly, informally, and across locations.
- Coordination of the participation of SPP members in the organisation of SPP-external schools, workshops and conferences, in particular, coordination of the organisation of special SPP-themed symposia at the annual conferences of the DPG, ECIS, APS or MRS (in this context also maintenance of a list of SPP-relevant scientific events). Coordination of meetings within the framework of national and international conferences.
- Support for the sharing of research instrumentation, numerical algorithms, etc. and of the corresponding training activities (creation and maintenance of a list of available resources and the corresponding contact persons).

We note that the responsibility for the central tasks lies with the Programme Committee while the SPP Manager executes most corresponding tasks. To do so efficiently, (s)he continuously exchanges information on the individual areas of his/her work with the members of the programme committee and has secretarial and technical support. The division of responsibility in the programme committee is as follows: Prof. Thiele represents the SPP towards third parties and the DFG. He is responsible for the overall coordination of all aspects. Prof. Butt is responsible for the SPP events. Prof. Vollmer is responsible for the joint use of equipment and the exchange of personnel between groups, while Prof. Seemann is responsible for equal opportunity measures and the promotion of junior researchers. Dr. Karpitschka is responsible for the internal exchange of information (newsletter) and public relations (homepage, press, social media) and oversees the implementation of our concept for secure and easily accessible data storage.

Travel funds for the SPP Manager[†]

Individual SPP locations have to be briefly visited (2-day travel, twice a year, a total of $6 \times (160 + 200) = 2\,160$ €). The presence of the manager at all SPP events is also required

[†]For all travel we estimate accommodation costs as 60€/per night and 20€subsistence. We assume average travel costs of 200€within Germany, of 400€within Europe and of 800€from overseas.

(a total of 20 days and 5 trips: 2 600 €); i.e., **in total 4 760 €** travel costs for the entire three-year period. A further **1 500 €** are requested for administration-related travel of the coordinator. The use of RocketChat, hosted by the Gesellschaft für wissenschaftliche Datenverarbeitung mbH Göttingen (GWDG), is free of charge.

The funds applied for in the Coordination Module are summarised in the following table.[‡]

Module	Personnel	Direct Costs	Purpose
2.1 Coordination	50% WMA TVL-13/14 10% Secretary (TVL-8) 19 512€	4 760€ 1 500€	SPP-Manager Secretarial support Technical support (10 hr/wk SHB) Travel of SPP-Manager Travel of coordinator
2.1 Sum	19 512€ + TVLs	6 260€	

2.2 Network Funds Module (Funding for Staff, Direct Project Costs, Instrumentation)

2.2.1 Knowledge Manager

To establish and maintain a structured collection of source data and to instrument the knowledge transfer between the SPP projects and from the SPP towards the wider scientific community we plan to employ a **Knowledge Manager**. Correspondingly, we request a further 50% WMA TVL-13/14 position.[§] In addition, the Knowledge Manager bundles and supports the public relations effort of the SPP. For the secretarial support of the Knowledge Manager we request a 10% secretarial position, and for the technical support 10 hours student assistant (SHB) per week (the latter amounts **in total to 19 512€**).

According to the motto ‘the whole is more than the sum of its parts’, we believe that the SPP should provide a knowledge transfer service that goes beyond standard scientific publications resulting from the individual projects. In order to live up to open and reproducible science, a structured access shall be created to the source data, methods and algorithms, which are typically behind Bachelor, Master and doctoral theses and publications generated in relation to the SPP. In order to facilitate the training on new methods, the knowledge manager will support the development of hands-on tutorials that are normally text-based step-by-step introductions into experimental recipes, theoretical

[‡]Note that within the DFG’s Elan system all means for personal had to be introduced within the Network Funds Module.

[§]To ensure that both sets of tasks are realised with equal verve, ideally the SPP Manager and the Knowledge Manager shall be two distinct people. To ensure that they can remain scientifically active the respective second half of their WMA TVL-13/14 positions shall be provided via other funds. However, depending on the availability of suitable candidates and these additional funds it may be necessary to combine the two positions into one 100% WMA TVL-13/14 position.

approaches and numerical algorithms (see also box on S. 8 on their necessity). In addition, the Knowledge Manager shall develop further concepts for expanding, securing and distributing this knowledge base. (S)he shall cooperate closely with the SPP members and support them in filling this format with content. In order to ensure his/her efficient work and interaction with the individual groups, the Knowledge Manager should be familiar with the wider scientific field of the SPP and be interested in the distribution of knowledge on experimental, numerical and theoretical methods.

In detail, the tasks of the Knowledge Manager are:

- Technical and content-related setup and updating of the static SPP website; This includes short scientific representations of all projects, as well as brief portraits of the participating groups and researchers. The website will also be used to communicate job offers, highlights, latest results and activities (the latter information is provided by the SPP manager).
- Development of a 'portal to ressources' about our research on the wetting of flexible, adaptive and switchable surfaces as part of the SPP website. It shall on the one hand present the new scientific results to the wider public and on the other hand secure and distribute the knowledge base.
- Building and maintaining a structured collection of experimental protocols and textual tutorials on analytical and numerical methods.
- Realisation and further development of our concept for secure and easily accessible long-time source data storage. In particular, we will aim at making all source data and algorithms related to publications and Bachelor, Master and doctoral theses generated in relation to the SPP freely available.
- Linking of the slides of lectures held during the workshops with additional available material and making the corresponding information available through our portal.
- Establish our own channels/projects in selected social media to foster popularisation of the problems we work on and of the obtained results (e.g., projects in *Research-Gate* or Channel in, e.g., *YouTube*, *Vimeo* or *Community Video* within *Internet Archive*.
- Collection and development of common benchmark problems for experiments and simulations.
- Liase with the SPP Manager regarding the different lines of funding for exchanges and visits to explore the possibility of interactions of the beneficiaries with our portal to ressources, in particular, with the creation of the tutorial apparatus.
- Organise and administrate the public relations activities of the SPP, in particular, the related finances (see sec. 2.8). Liase with the public relations offices of the involved universities. Organise the public lectures and video contest planned at SPP events.

Why do we need hands-on tutorials?

Problem: Our current publication practice mostly serves the purpose of compactly presenting our latest results. Increasingly, publications are also an important tool to account for our scientific productivity. As a result, the easily understandable establishment and passing on of knowledge is often neglected. This implies that the reproduction of published results is often extremely time consuming and especially for brief contributions in high-impact journals often not possible based on the given information. This makes it, in particular for junior researchers, more difficult to enter interdisciplinary research where working knowledge from several fields must be quickly acquired.

Our approach: The planned creation of detailed hands-on tutorials on experimental, numerical and theoretical methods in the field of the SPP shall ensure a continuous flow of practical and theoretical knowledge between the various groups already allowing for a quick acquisition of knowledge already for Master and beginning doctoral students. This shall be realised through detailed textual tutorials which can be worked through step-by-step on one's own pace in the laboratory or at the computer. The dynamically growing tutorial apparatus shall be integrated into the SPP website.

Beneficiaries: Through the tutorials, starting Master and doctoral students will receive valuable methodical guidance and low-threshold aids, which they can adapt for their own research. The tutorial apparatus can also be used in Bachelor projects. The SPP will also be able to employ them in hands-on sessions during short local courses and advanced schools of its second phase.

Practical implementation: The Knowledge Manager is responsible for the development and maintenance of the apparatus. This includes the development of a standard that defines the structure and the typical content of a tutorial text containing some background, specific methodology, step-by-step realisation, and all necessary resources. (S)he supports the members of the SPP in the creation and publication of the tutorials by adapting the obtained information to the evolving standard, by testing and amending the tutorials, by linking them with relevant information on the Internet, etc. (S)he will stimulate and encourage the creation of new tutorials related to Bachelor, Master and doctoral theses within the SPP groups.

Examples related to the application of nonlinear methods, in particular, of numerical path-continuation methods to systems involving mesoscopic hydrodynamics and soft condensed matter can be found on

<https://www.uni-muenster.de/CeNoS/Lehre/Tutorials/continuation.html>.

Travel funds for the Knowledge Manager

Individual SPP locations have to be briefly visited (2-day travel, twice a year, a total of 2 160 €). The presence of the manager at all SPP events is also required (a total of 20 days and 5 trips: 2 600 €); i.e., **in total 4 760 €** travel costs for the entire three-year period.

2.2.2 Exchange of doctoral students between different projects

As many as possible of the junior researchers financed by the SPP should have the opportunity to work for 2-6 weeks at a complementary group (not directly related

to their projects), e.g., experimentalists to theoreticians and vice versa, chemists to hydrodynamicists etc. In this way all involved junior researchers are exposed to different specific themes, widen their horizon and deepen the mutual understanding of their scientific questions, approaches and solutions. The need to in depth explain their own project and approach to researchers working on other projects will help them to place their work into the wider picture. Such stays also present very good opportunities for guest and host to share and test the tutorials created within their respective projects.

Estimated costs for such a stay (on average four weeks): 2 800 € (30x60 € accommodation, 30x20 € daily allowance and 400 € transport [including trips home]). The aim is that in Years 2 and 3 of the SPP, two thirds of the total of about 30 doctoral students receiving funding will organise and carry out such a training stay.

The estimated costs thus amount to a **total of €56 000**.

To obtain the funds for such a visit, the sending group submits a brief application to the SPP Manager that sketches the planned work programme for and the envisioned benefits of the envisioned stay. The application is accompanied by an informal confirmation letter of the hosting group. There will be 4 deadlines per year for such applications that are then collected by the SPP Manager. They are discussed and ranked by the Coordination Board that takes a final decision about their funding. The funds are administrated by the SPP Manager. The Knowledge Manager is informed about the stays to accompany the corresponding testing and amending of tutorials.

2.2.3 Networking of research activities in the international science system

We also apply for funding for visiting researchers. This shall allow us to invite internationally leading researchers to interact for up to 8 weeks with several groups that work on different SPP projects. The funds are requested and administrated within the Coordination Funds (and not within the individual projects) in order to ensure that researchers are invited who are relevant to several SPP projects. See examples in boxes on pages 9 and 10. The visiting researchers should, beyond the duration of their stay, remain in scientific contact with the researchers involved in the visited SPP projects. The emerging or strengthened links shall intensify the international embedding of the SPP, increase its visibility and initiate satellite projects.

Example 1: Researcher A from another European country visits group X for two weeks with whom she already has a cooperation on an SPP topic. Afterwards she visits for one week SPP groups Y and Z working on other complementary SPP projects. After the visits, she remains in scientific contact with groups Y and Z and acts as a mentor of a doctoral student at group X.

Estimated costs for such a stay: 3 200 € (30x60 € accommodation, 30x20 € daily allowance and 800 € transport).

Example 2: Researcher B from overseas (e.g. Asia or America) visits project group U for four weeks with whom he has already been in scientific contact. Afterwards he visits group V for four weeks interacting with another complementary SPP project. During the visit he is one of the 2-3 speakers of a 1 day short instructional course open to all SPP members. After the visit he stays in scientific contact with groups U and V and acts as host for several visiting SPP PhD candidates.

Estimated cost of such a stay: 5 800 € (60x60 € accommodation, 60x20€ daily allowance and 1 000 €transport).

We plan for 3-4 such visits per year, a total of about ten. Averaging over stays as in the example boxes, the approximate costs for the three-year period is **in total 45 000 €**.

To obtain the funds for such a visit, the lead inviting group (e.g., groups X and U, respectively, in the two examples) submits a brief application to the SPP Manager that details the planned work programme for and envisioned benefits of the stay. It shall be accompanied by informal confirmation letters of the other involved group(s) and the international researcher to be invited. There will be 4 deadlines per year for such applications that are then collected by the SPP Manager. They are discussed and ranked by the Coordination Board that takes a final decision about their funding. The funds are administrated by the SPP Manager. The Knowledge Manager is informed about the visits and explores the possibility of a holding a local short instructional course open to all SPP members and incorporates corresponding teaching material into our portal to resources.

The funds applied for in the entire Network Funds Module are summarised in the following table.

Module	Personnel	Direct Costs	Purpose
2.2 Network Funds	50% WMA TVL-13/14 10% Secretary (TVL-8) 19 512€		Knowledge Manager
			Secretarial support
			Technical support (10 hr/wk SHB)
		4 760€	Travel of Knowledge Manager
		56 000€	PhD student exchange
		45 000€	Visiting Researcher
2.2 Sum	19 512€ + TVLs	105 760€	

2.3 Start-up Funding Module

In academic research it is generally acknowledged that for junior researchers it is very important to gain scientific independence at an early stage. Therefore, in this module, we would like to enable junior researchers to work independently. We plan to support on the one hand extended 1-2 month visits of junior researchers working outside Germany that want to explore possibilities for collaboration with and/or later work opportunities in a SPP group. On the other hand we want to allow junior researchers from within the SPP to organise and realise such stays at groups abroad.

Ideally, these visits shall explore the possibility of a future return for a postdoc or junior group leader position to the host group. Therefore, during the visit guest and host should together develop an idea for a proposal for a personal grant (e.g., incoming/outgoing DFG/DAAD postdoc grant, Marie Curie Fellowships) or a grant allowing for the establishment of a junior research group (e.g., ERC Starting, Volkswagen's Freigeist Fellowship or DFG's Emmy Noether Programme). The visit shall allow the guest and host to kick-off the development of the project and initiate the writing of the grant proposal. The proposal shall then be finalised over the following month to be submitted latest half a year after the visit. In consequence, the visit should take place at least 18 months before the foreseen start of the postdoc/group project. For doctoral candidates of the SPP this implies that such a visit abroad should take place in their second year.

Doctoral candidates within the SPP with excellent advances in their first year should be made aware of this funding instrument at an early stage. Senior researcher of the SPP will use their international contacts to promote the funding instrument and to inform and interest suitable candidates.

To obtain the funds for such an initial visit, the junior researcher submits a brief two-page application to the SPP Manager that details the planned work programme for and costs of the stay, and some details of the envisioned grant application. It shall be accompanied by an informal confirmation letter of the host group. There will be 4 deadlines per year for such applications that are then discussed and ranked by the Coordination Board that takes a final decision about their funding. The funds are administrated by the SPP Manager. The Knowledge Manager is informed about the visits and explores the possibility of interactions with our portal to resources.

Estimated costs for such a stay of an incoming guest (on average one and a half months): 4 200 € (45x60 € accommodation, 45x20 € subsistence and 600 € transport). For the outgoing visits we estimate higher accommodation and subsistence costs of about 100 € per day, i.e., on average such a stay will cost 5 100 €.

We plan for three outgoing and three incoming research stays with a **total cost of 27 900 €**. The funds applied for in this module are summarised in the following table.

Module	Personnel	Direct Costs	Purpose
2.3 Start-up Funding		27 900€	Grant exploration visits
2.3 Sum		27 900€	

2.4 Gender Equality Measures in Research Networks Module

The promotion of female researchers and the compatibility of family and research within the SPP is of particular interest to the programme committee. To this end, a gender equality concept tailored to the requirements of the SPP has been developed, based on the DFG information sheet 'Gleichstellungsmaßnahmen in Forschergruppen und Schwerpunktprogrammen'. In addition to the numerous measures implemented without additional funds (equal opportunities commissioner, mentoring, announcement of measures and offers for the advancement of women, etc.), we here apply for funds to support the career development of women and the compatibility of SPP participation for

researchers with family responsibilities:

- To facilitate the participation at conferences, schools and colloquia for parents, we plan to offer childcare during SPP events. For this purpose we apply for the funds for a caregiver for the duration of the meetings (see section 2.6). According to the usual care key, this makes it possible to care for one child under one year of age, three children aged 1-3 years, or up to five children over 3 years. Due to the shortage of skilled workers in the field of child care, it is currently extremely difficult to individually implement such measures. Therefore we will organise them via an established company (pme Familienservice). According to the present offer, the costs for setting up a temporary childcare facility amounts to 350 € as management lump sum per event, 40 € per hour per caregiver, 5 € per child and day for the provision of play and craft materials, and 6 € per child and event for accident and liability insurance. Five events with a total duration of approx. 20 days and a supervision duration of 8 hours/day result in costs of approx. 9000 €. In addition, in most cases the travel and accommodation expenses of the supervisor must be covered, for which we apply for a further 5x500 € = 2 500 €. **In total this is 11 500€.**
- The long-term exchange with partner groups within the SPP should also be made possible for parents. In order to be able to compensate for the additional costs incurred in local childcare, for example for babysitters in the absence of a parent, a **total of 5 000 €** is applied for. These funds shall also be used to cover additional costs for family-friendly accommodation at the host location that exceed the daily rates of the Federal Travel Expenses Ordinance. In addition, a weekly family trip home is to be covered by these funds.
- In the case of special dependencies (e.g. breast-feeding) or need for short-term care, additional costs shall be taken over by the SPP after consultation with the equal opportunities commissioner. The particular need of required funds is difficult to estimate beforehand. Therefore, we apply for a further **2 000 €** for flexible use in the context of equal opportunities and family friendliness.
- In order to help make research a family-friendly profession, we place a great value on enabling coverage for maternity protection and parental leave absences and on the facilitation of the return to one's original tasks within the project, as well as of the continuation of one's scientific qualification. In this context we apply for an additional 10h/week SHB for one year, amounting **in total to 6 504€).**
- The above-mentioned funds will also to be made available in connections with care obligations to close family members.
- The SPP will also draw the attention of female doctoral and postdoctoral researchers to mentoring programmes for women in research that are offered by the individual institutions that participate in the SPP. We apply for funds to support the participation of female researchers in such programmes. These shall fund participation in dedicated courses and mentoring visits. We estimate the need for 10 times travel funds of 880 € (400 € participation fee and 440 € transport and accommodation). Overall this amounts to **8 400 €.**

The funds applied for in the Equal Opportunities module amount to **in total 33 404 €** as summarise in the following table.

Module	Personnel	Direct Costs	Purpose
2.4 Gender equality		11 500€	Childcare at events
		5 000€	Local childcare
		2 000€	Special dependencies
		8 400€	Career workshops
		6 504 €	Parental leave support (3.3 hr/wk SHB)
2.4 Sum		33 404€	

2.5 Temporary Substitute for Clinician Module

Not requested.

2.6 Project-Specific Workshop Module

The SPP organises various types of internal and open events, some of which are financed by the Coordination Funds, in order to organise interdisciplinary and cross-location cooperation/networking, presentation of results, etc. The following table gives an overview of the first 3-year funding period:

Event	Year 1	Year 2	Year 3	Participants
Advanced school (5 days)	×	-	-	PhD students (D), Postdocs (P), 10 guest speakers (GS)
Internal workshops (3-4 days)	×	×	-	D, P, 4 GS, Principal Investigators (PI)
PhD workshop (3-4 days)	-	×	-	D, P, 4 GS
International conference (5 days)	-	-	×	D, P, PI, 20 GS

2.6.1 Advanced school

During the first half of the first year of the SPP we will organise a one-week Advanced School, which supports the initial training and networking of the junior researchers of the SPP. Funds for travel, accommodation and subsistence of the SPP participants will be decentrally applied for within the individual projects (recommended sum 600 € per person), while the costs of conference location, guest speakers and student assistants

will be applied in the Coordination Funds: We expect 10 lecturers to teach 2-3 hours each, accompanied by short contributed talks and posters by the participants and ample time for discussion. The invited speakers shall be available for discussions throughout the week. Estimating an equilibrated mixture of lecturers from Germany, Europe and overseas, the related expected cost is 8 200 €. For rent of technical equipment and room we estimate 1 500 €, while 120 hours of SHB student assistant amount to approx. 1 600 €. The applied for funds amount to **in total 11 300 €**.

2.6.2 Doctoral student workshop

In the second year there will be a 3-4 day doctoral student workshop. It shall be organised by the junior researchers themselves and offers all of them the opportunity to discuss their first results with each other and with selected national and international experts. An informal atmosphere is intended to give all junior researchers an opportunity to obtain feedback for their work, network with each other and with established researchers. The costs of the SPP participants will be decentrally applied for in the individual projects (recommended sum 520 € per person), while the costs for conference venue, equipment, student assistants and guest lecturers, as well as for 10 scholarships for junior researchers from the SPP who are not financed by SPP projects, are applied for in the Coordination Funds:

We estimate for conference venue and equipment 750 €, 40 hours of SHB student assistant amount to approx. 800 €, 4 guest lecturers 2 480 €, 10 scholarships 5 200 € resulting in a **total of 9 230 €**.

2.6.3 Internal workshops

Furthermore, towards the ends of the first and second year SPP-internal 3-4 day workshops will be organised with an average of 70 participants. They facilitate the internal scientific exchange, the internal presentation of the achieved results and the planning of the further collaboration. Each of these workshops will also feature four keynote lectures by renowned external guest lecturers, which will present current hot topics relevant to the SPP. In the remaining time, shorter talks on SPP projects will be given by members of the SPP including the junior researchers. We also plan for extended poster sessions and ample discussion time to allow all participants to familiarise themselves with the methods and results of the other groups.

The costs of the SPP participants are applied for decentrally in the individual projects (recommended sum 520 € per person), while the costs for conference venue, equipment, student assistants and guest lecturers, as well as for 10 scholarships for junior researchers from the SPP who are not financed by SPP projects, are applied for in the Coordination Funds:

Per workshop we estimate for conference venue and equipment 1 500 €, 120 hours of SHB student assistant amount to approx. 1 600 €, 4 guest lecturers 2 880 €, 10 scholarships 5 200 € resulting in a total of 11 180 € per workshop.

Overall applied for funds in the Coordination Funds for both workshops are **in total 22 360 €**.

2.6.4 International conference

Towards the end of the funding period a one-week international conference with about 120 participants shall be organised to present the achieved progress on a broad international level. In the first funding period this is planned for summer 2022. Our intention is to invite 20 outstanding international researchers as speakers to have 50% of speakers from within the SPP and 50% from outside the SPP. The travel and accommodation costs of the SPP participants shall be decentrally applied for in the individual projects (recommended sum 600 €/per person), while the costs for conference venue, equipment, student assistants and guest lecturers, as well as for 10 scholarships for junior researchers (about half of them from European groups not in the SPP) are applied for in the Coordination Funds: We estimate for conference venue and equipment 1 500 €, 120 hours of SHB student assistant amount to approx. 1 600 €, 20 guest lecturers 16 400 €, 10 scholarships 7 000 € resulting in a **total of 26 500 €**. If some of the guest speakers do not stay the entire 5 days, the corresponding funds will be employed to increase the number of scholarships.

The funds applied for in this module are summarised in the following table.

Module	Personnel	Direct Costs	Purpose
2.6 Project-Specific Workshops		11 300€	Advanced school
		9 230€	PhD student workshop
		23 360€	Internal workshops
		26 500€	International conference
2.6 Sum		70 390€	

2.7 Mercator Fellow Module

Not requested.

2.8 Public Relations Module

It is an important component of academic work to enthuse the broad public for current research topics and to promote the general interest in science and research. In order to foster this within the SPP, three essential components shall be offered – all coordinated by the Knowledge Manager: (i) Digital communication with the public via the central website and via social media, (ii) public evening lectures at our conference and workshops and (iii) a video competition with subsequent publication in the social media channels of the SPP as well as a public video installation at the SPP events.

For the continuous public presentation of the SPP we will focus on the central website as well as on our own channels in social media. The public relations work on these platforms is carried out by the Knowledge Manager (see 2.2). The technical realisation of the website (server service, web design, etc.) will follow the guidelines of the institution of the coordinator and be realised by the Knowledge Manager with the help of the student assistant (10 hr/wk SHB) requested in 2.2.

In connection with some of the planned SPP events (workshops, international conference) public evening lectures in German shall be offered free of charge. This instrument has proved very successful at other conferences organised by members of the Coordination Board. In order to foster the greatest possible interest in the public, these lectures are to be advertised in local media. Since such lectures require a relatively high preparation effort, we intend to provide the speakers with a honorarium of 500 €. The travel and accommodation expense for his/her participation in the entire SPP event will also be covered. We apply for each of 3 events for 1 500 €, i.e., **in total 4 500 €**.

As a third instrument of public outreach we plan to organise a video competition among the participating projects. The aim is to create an instructive 3-minute video about a SPP-relevant topic on a level apt for the general public. This concept has been very well received for many years at the Fluid Mechanics Conferences of the American Physical Society (APS-DFD). In order to achieve a lively and competitive participation, we apply for a prize money of 600 € for the winner, 400 € for the second placed contribution, and 200 € for the third place. The contributions will be submitted in good time before the international conference at the end of the funding period and will be presented there throughout the event. At the conference, international researchers will be asked to evaluate the contributions and, together with the Coordination Board, determine the winners. **Total costs is 1 200 €**. All videos will be published via the SPP channels.

The funds applied for in this module are summarised in the following table.

Module	Personnel	Direct Costs	Purpose
2.8 Public relations		4 500€	Public evening lectures
		1 200€	Video contest
2.8 Sum		5 700€	

3 Project requirements

3.1 Scientific equipment

Not requested.

4 Additional information

None.