

Technical aspects: DFG/NRF

From the Shoulder to the Knee: Towards an Overarching Understanding of Particle Transport in Astrophysical Environments

Kiel – Bochum – Potchefstroom – Kaapstad

Formalities

- Dual degrees? added values:
 - Bochum
 - Potch
 - Kiel: strong requires, bilateral basis faculty
 - Where to be defended?
- Co-supervisor? (What do you need to do this?)
 - Potch: (Researchers/Assoc. profs/Full prof) supervising after PhD possible, rule: first PhD co-supervised, after that allowed to lead on own
 - Kiel: Senior Lecture
 - Bochum: Senior Lecture
- How is supervision provided (Zoom/Skype) -> Section in proposal (Pre-Pre-Proposal: Committee of 3 people) -> What did we write in DLR gradual school (Space Life)
 - interaction of the students: Problems -> co-supervisor -> supervisor -> consortium-> Quality management
 - within first six month: students need to come up with a research proposal -> Problems can already be identified:
 - meeting once a year for every student (first year two meetings, after that yearly)
 - linking external international experts to the topic
 - Lecture series due to diversity of the topics (invitation of the presenters: training aspect)
 - workshops with all students (invitation of independent reviewer)
- How do we select students?
 - only students with a Masters degree
 - selection interviews (selection committee (supervisors); open job-announcement at university-channels and own webpage); Zoom/Invitation
 - International office (to check if it fits our Masters degree requires)
- 9 years of funding (2 x 4,5 a)

decision within 6 Months -> Pre-proposal: end of 2018 ; Deadline Main proposal 01.10.2019

- 22 page proposal -> save a few pages for formal requirements!
 - requirements: environment/collaborations/
 - external experts invited to work together with students (lively visitor exchange at the universities)
- keep in mind: evaluation of DFG Referees
- DFG pre-selection, NRF

mobility of students -> encouraged to go to internet. conferences (finances)

Research Areas

(A) the stellar and interstellar environments of the various astrophysical systems (stellar winds, astrospheres, interstellar medium)
(Bomans, Ferreira, Herbst, Kleimann, Kopp, Letarte, Scherer, Venter, Weis)

(B) the turbulent nature of the astrophysical plasmas forming these systems,
(Engelbrecht, Fichtner, Grauer, Moloto)

(C) the transport of energetic particles within such turbulent plasmas,
(Dresing, Heber, Strauss, Wimmer-Schweingruber)

(D,E) the influence of cosmic rays on

- accretion disks in the young universe
- the formation and evolution of protoplanetary disks
- on galactic halos

(Böttcher, Dettmar, Duschl, Loubser, Wolf)

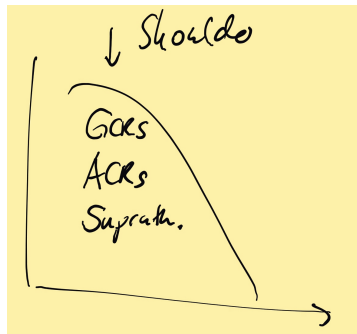
Talking:

exchange heliophysics \Leftrightarrow astrophysics

How to link:

- Protoplanetary disk: Photontransport (Kiel) - MHD (Bochum) - Particle transport/SDEs (Potch) (what kind of expertise is necessary to model "how do high E-particles interact with dust grains?")
 - ALMA, SOPHIA, ...
- Observational projects

- Instrumentation
- Facilities
- Common interests
- Full access to data + QM



Addition for the Research Areas

A - C/D

- Radiation effects on (exo)planets (Mars, Moon, Venus, Moon's Jupiter) -> Link to SA: CR transport in astrospheres
- Radiation effects on technologies

to hand in for the Pre-Proposal: Topic suggestion plus 2-3 sentences of the key points

studying the DFG - requirements:

www.tp4.rub.de/~hf/IRTG/50_07_en.pdf

Students

- longer stays abroad
- international co-supervision
- complementarity
- added value
- "Softskill" training

Characteristics

- Qualification

- Sustainability
-

Research programme

- complementary knowledge

Interdisciplinary approaches: Heliophysics \Leftrightarrow Astrophysics \Leftrightarrow Exoplanets(?)

- Plasma Turbulence fundamental part
- Dosimetry (biological effects)