



Graduate School (MGK)

CIM Kickoff Meeting, RUB, 2022-05-30

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European Research Council
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Goals

- **Superdisciplinarity:** Develop a common language
 - to use links between sub-disciplines,
 - to disseminate results within CIM,
 - to receive a unique super-disciplinary background.
- **Independence:** Qualify ECRs as independent researchers.
- **Internationalisation:** Build up an international network for ECRs.
- **Career development:** Prepare ECRs for academic/non-academic careers.

Targeted at doctoral and postdoctoral researchers = early career researchers (ECRs); also open for ECRs not paid from CIM.

Qualification program

- Physics courses bridging the sub-disciplines (new + existing)
- Soft- and hard-skill courses beyond physics (especially scientific writing, visualisation, and data management)
- Exchanges with international experts (outgoing ECRs, incoming experts)
- Annual workshops on different topics
- Bi-annual school
- Peer-to-peer meetings between ECRs

Course/event	Lecturers/Initiator	Volume	New
Cosmic Interacting Matters	all CIM members	25 h	✓
Astrophysics			
Introduction to Astrophysics	Dettmar, Franckowiak	50 h	
Theoretical Astrophysics	Fichtner, Tjus	50 h	
Astrophysics with Peculiar Galaxy Types	Bomans, Dettmar	25 h	
Stellar Astrophysics	Dettmar, Bomans	25 h	
General Relativity	Grauer, Tjus	50 h	
Heliophysics	Fichtner	25 h	✓
Interstellar and Intergalactic Medium Physics	Bomans, Dettmar	25 h	✓
Radio Astronomy	Dettmar	25 h	
X-ray Astronomy	Bomans	25 h	
Cosmology	Hildebrandt	25 h	
Astroparticle Physics			
Introduction to Astroparticle and Particle Physics	Spaan, Rhode, Kampert, Albrecht, Elsässer	50 h	✓
Theoretical Astroparticle Physics	Tjus, Eichmann	25 h	
Experimental Astroparticle Physics	Franckowiak, Kampert	25 h	
Theoretical Neutrino Astrophysics	Tjus	25 h	✓
Cosmic-ray Transport and Interactions in Galaxies	Rhode, Tjus	25 h	✓
Ultra-High Energy Cosmic-Ray Physics	Kampert	25 h	
Multi-Messenger Astrophysics	Kampert, Franckowiak	25 h	
Gamma Astronomy	Elsässer, Rhode	25 h	
Dark Matter in (Astro-)particle Physics	Elsässer	25 h	✓

Course/event	Lecturers/Initiator	Volume	New
Particle Physics			
Cross Sections	Rhode	25 h	
Hadron Decays	Spaan	25 h	
Hadron Collider Physics	Spaan, Albrecht	50 h	
Wrong Discoveries in Particle Physics	Spaan, Albrecht	25 h	
Generator Tuning in Astro- and Particle Physics	Spaan, Rhode, Albrecht	25 h	✓
Parton Density Functions and Forward Scattering	Spaan, Rhode, Albrecht	25 h	✓
Plasma Physics			
Theoretical Plasma Physics	Fichtner, Grauer, Tjus, Innocenti	50 h	
Introduction to Hydrodynamics	Fichtner	25 h	
Introduction to Space Physics	Innocenti, Fichtner	25 h	
Turbulence and Stochastic Systems	Grauer	50 h	✓
Methods			
Data Mining Methods	Rhode, Spaan, Wright	25 h	
Inverse Problems	Rhode, Spaan	25 h	✓
Differential Equations vs. Simulations	Fichtner Rhode, Tjus	25 h	✓
Computational Physics I+II	Grauer, Dreher, Innocenti	50 h	
Astrostatistics	Wright	25 h	
Indirect Discoveries	Albrecht, Spaan	50 h	
Data Analysis Methods	Rhode, Albrecht	75h	
Advanced Statistical Methods	Rhode, Albrecht	25 h	
Artificial Intelligence for Astroparticle- and Particle Physics	Rhode, Albrecht	25 h	✓
Specific Research Topic	CIM Fellow Lecturers	5-10 h	

Course/event	Lecturers/Initiator	Volume	New
Workshops and skill training			
CIM workshop	all CIM members	1 week	✓
CIM Fellow lectures	CIM Fellows	1 week	✓
Graduate school "Plasma Astroparticle Physics"	international experts	1 week	✓
Workshop: Simulation methods for space and astrophysical plasmas	Grauer	2 weeks	✓
Workshop: AI methods for astrophysics	Innocenti	1 week	✓
Workshop: GeV to TeV gamma-ray data analysis of point-like sources and diffuse emission	Franckowiak	1 weeks	✓
Workshop: Observing the non-thermal Universe – Instruments and techniques in astro/particle physics	Dettmar	2 weeks	✓
Workshop: How to extract data from large-scale magneto-hydrodynamic simulations	Bomans	1 week	✓
Workshop: Cosmic-ray propagation with CRPropa – application and development	Tjus	1 week	✓
Workshop: MC generators and experimental data in astro-particle physics	Albrecht	1 week	✓
Workshop: Cosmic-ray propagation with CRPropa: applications and development	Tjus	1 week	✓
Scientific Writing for physicists	Hildebrandt, Wright	5h	✓
Vizualization	S. Hüttemeister	10h	✓
Basics of Research Data Management	A. Schramm, R. Grauer, B. Spaan	10h	✓
Soft-skill courses	various	various	

Management and supervision

- Centralised advertisement of positions (Z project)
- Recruitment by PIs of a project
- Three-year contracts for doctoral researchers
- Supervision agreement



Betreuungsvereinbarung

zwischen

..... (Doktorandin/Doktorand),

..... (Erstbetreuerin/Erstbetreuer) und

..... (Zweitbetreuerin/Zweitbetreuer)

zur wissenschaftlichen Unterstützung und kontinuierlichen Betreuung bei der Erarbeitung der Dissertation mit dem Arbeitstitel

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.....
.....

- 1) Betreuung und strukturierte Promotion
 - a) Die Erstbetreuerin bzw. der Erstbetreuer stellt der Doktorandin bzw. dem Doktoranden einen Arbeitsplatz sowie die erforderlichen Arbeitsmittel im Rahmen der Möglichkeiten für die Dauer von mindestens drei Jahren bereit.
 - b) Die Doktorandin bzw. der Doktorand verpflichtet sich, die zur Verfügung gestellten Arbeitsmöglichkeiten effektiv zu nutzen.
 - c) Die Beteiligten tauschen sich regelmäßig über den Fortgang der Arbeit aus. Insbesondere ist den Betreuerinnen bzw. den Betreuern jährlich Bericht zu erstatten.
 - d) Das Betreuungsverhältnis ist unabhängig davon, ob ein Beschäftigungsverhältnis mit der Ruhr-Universität Bochum oder eine sonstige Promotionsfinanzierung vorliegt.
- 2) Gute wissenschaftliche Praxis in Forschung und Nachwuchsförderung
 - a) Die Doktorandin bzw. der Doktorand und die Betreuerinnen bzw. die Betreuer verpflichten sich zur Einhaltung der Leitlinien guter wissenschaftlicher Praxis der Ruhr-Universität Bochum.
 - b) Die Betreuenden und die Fakultät fördern die wissenschaftliche Selbstständigkeit des Promovierenden im Rahmen ihrer Möglichkeiten.
- 3) Ein Abbruch des Betreuungsverhältnisses ist dem Promotionsausschuss unverzüglich anzuzeigen.

Ein Auswahlgespräch hat stattgefunden (§3 Abs. 1 PromO 2011)

..... (Datum, Doktorandin/Doktorand)

..... (Datum, Erstbetreuerin/Erstbetreuer)

Namens- und Lehrstuhlstempel

..... (Datum, Zweitbetreuerin/Zweitbetreuer)

Namens- und Lehrstuhlstempel

Management and supervision

- Centralised advertisement of positions (Z project)
- Recruitment by PIs of a project
- Three-year contracts for doctoral researchers
- Supervision agreement (including ORCID)
- Doctoral researchers get two advisers (CIM PIs)
- Weekly project seminars and regular meetings with supervisor (at least monthly)
- Annual review based on GCCL template

MGK KICKOFF FORM
CONFIDENTIAL

This form should be sent to the Reviewee in advance of the Annual Review meeting and used as a template for self assessment and preparation. The Reviewee should send their partially completed form back to the reviewer one week prior to the meeting. Following the Annual Review meeting, the summary section of the form should be completed by the Reviewer and Reviewee.

SECTION 1: REVIEW DETAILS

Name	
Name of first Supervisor	
Name of second Supervisor	
Name of International Supervisor	
Date of Employment	
Date of Kickoff Meeting	
ORCID ID (create if necessary)	

SECTION 2: OBJECTIVES FOR FORTHCOMING YEAR

SMART (Specific, Measurable, Agreed/Achievable, Relevant/Realistic, Time-bound) objectives. To be proposed by the Reviewee and discussed and finalised during the Kickoff meeting.

SMART objectives	Timescale
1.	
2.	
3.	
4.	
5.	

SECTION 3: CAREER ASPIRATIONS, FUTURE PLANS AND PERSONAL / PROFESSIONAL DEVELOPMENT NEEDS FOR FORTHCOMING YEAR

Complete the table below to summarise career aspirations, future plans and details of agreed training/development requirements in order to achieve agreed objectives or longer-term plans.

Summary of career aspirations and any future plans or longer term objectives
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Management and supervision

- International mentor selected by ECR and PI
- (Co-)supervision of bachelor- and master theses
- Organisation of CIM events
- Mechanisms in place to solve conflicts (e.g. ombudsperson)

Organisation

- Graduate school leads: A. Franckowiak, H. Hildebrandt
- One of the leads becomes member of CIM board (rotation after 2 years).
- ECR assembly during CIM workshops
 - Discuss research and non-research topics amongst themselves.
 - Elect a doctoral and postdoctoral representative.
Doctoral representative joins CIM board, postdoc is deputy.
Members of equal opportunity board, and PR board.

Environment

- **Graduate schools/centres** at participating universities:
 - RUB Research School
 - Graduate Center TUDo
 - Center for Graduate Studies BUW
- **Research Academy Ruhr**
Cross-university platform for ECRs
- **University Alliance Ruhr**
Coordinates interaction between Ruhr-area universities (and private sector)
Research Alliance Ruhr (newly founded centre for 4 focus areas)



What we need from you

- **Get involved and shape the graduate school yourself!**
- Make use of the many opportunities offered to you:
 - Organise workshops.
 - Invite international experts and organise their visits.
 - Set up weekly/monthly informal meetings.
 - Travel to your international mentors (2-3 months).
 - **Your own ideas!**



WE WANT YOU!

ECR social event

Wednesday afternoon; organised by Sophie and Linh

- Walk to the Kemnader See
- Mixed groups
(i.e. across projects/disciplines)
- Riddles along the way
- Beachvolleyball and outdoor games
- Back at RUB for workshop dinner

