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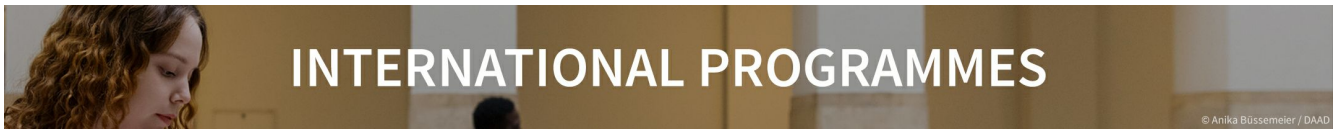

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Master's degree

Advanced Methods in Particle Physics

TU Dortmund University • Dortmund





Overview

Degree	Master of Science
In cooperation with	Università di Bologna (Italy) Université Clermont Auvergne (France)
Teaching language	• English
Languages	All courses are taught in English (100%).
Full-time / part-time	• full-time
Programme duration	4 semesters
Beginning	Winter semester
Additional information on beginning, duration and mode of study	The IMAPP programme starts at the beginning of September at the University of Clermont Auvergne.

Application deadline	• **Bachelor's degree obtained in Germany:**
	  ◦ Enrolment from **1 July to 31 December**
	  ◦ Interested students who enrol after the start of courses (approx. 1 September), e.g. due to delays in the issuance of the Bachelor certificate, should contact the head of the study programme.
	• **Bachelor's degree obtained in a European country other than Germany:**
	  ◦ Application from **15 March to 31 December**
	  ◦ Interested students who enrol after the start of courses (approx. 1 September), e.g. due to delays in the issuance of the Bachelor certificate, should contact the head of the study programme.
	• **Bachelor's degree (or equivalent) obtained outside of Europe:**
	  ◦ Application from **2 January to 15 July**

Tuition fees per semester in EUR	970 EUR

Additional information on tuition fees	The tuition fee of approx. 970 EUR per semester for IMAPP is the average tuition fee of the three participating universities. This fee is paid to the TU Dortmund University each semester.
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	Yes
Description/content	The International Master of Advanced Methods in Particle Physics (IMAPP) is a joint degree programme offered by the University of Bologna (Italy), the University of Clermont Auvergne (France) and TU Dortmund University (Germany), and it is supported by internationally renowned partner institutions. The main focus of the programme is on experimental and theoretical particle physics. Methodologically, the programme is based on three pillars, each of which is associated with one of the three universities. These are machine learning and statistical data analysis, instrumentation and detector physics, and large-scale scientific computing and programming. Training in these aspects is the second focus of the programme. The students entering the programme study as a cohort and attend courses together at the University of Clermont Auvergne (first semester), TU Dortmund University (second semester) and the University of Bologna (third semester) over the course of the first three semesters. In the fourth semester, the students will write a Master's thesis that can be carried out at one of the three universities or at one of the associated partner institutions.

Course Details

Course organisation	Details about the courses that are taught at each of the universities can be found on the IMAPP webpage. The type of courses that the students will attend are manifold and includ**dectures, seminars, lab courses and a spring school**. In the first three semesters, students will attend courses corresponding to approx. 30 ECTS (each semester) that are divided into compulsory courses as well as elective courses. The fourth semester is dedicated to research for the Master's thesis. The list of compulsory courses is outlined below: **First semester**: University of Clermont Auvergne: • Introduction to Quantum Field Theory and Gauge Theories • Introduction to Particle Physics and the Experimental Foundations of the Standard Model • Programming and Data Analysis • Statistics and Artificial Intelligence **Second semester:** TU Dortmund University • Model Building in Particle Physics • Practical Aspects of Particle Physics Measurements • Detector Systems in Particle and Medical Physics • Spring/summer school **Third semester:** University of Bologna • Advanced Standard Model • Phenomenology and experimental flavour physics • Computer Science for High Energy Physics • Preparation for scientific research and internship orientation ◦ Introduction to the partner universities/companies for the Master's thesis

- List of partner universities can be found at the bottom of the IMAPP website

Fourth semester:

- Research for the Master's thesis topic at any of the three universities or at one of the partner universities, laboratories or industry companies

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A Diploma supplement will be issued	Yes
International elements	• Courses are led with foreign partners • Projects with partners in Germany and abroad • International guest lecturers
Special promotion / funding of the programme	• Franco-German University (FGU) • Other (e.g. state level)
Course-specific, integrated German language courses	No
Course-specific, integrated English language courses	No

Costs / Funding

Tuition fees per semester in EUR	970 EUR
Additional information on tuition fees	The tuition fee of approx. 970 EUR per semester for IMAPP is the average tuition fee of the three participating universities. This fee is paid to the TU Dortmund University each semester.
Semester contribution	The semester contribution is included in the tuition fee.
Funding opportunities within the university	Yes
Description of the above-mentioned funding opportunities within the university	Various scholarships are available: • **Erasmus Mundus** • **Graduate School CAP GS (UCA)** • **The Franco-German University scholarships** • **Erasmus+ for internship in the fourth semester only** Detailed information can be found on the IMAPP website under "Scholarships & Fees".

Requirements / Registration

Academic admission requirements	• A first cycle degree qualification according to the European Qualifications Framework or an equivalent degree qualification in the field of Physics. This requires an examination of equivalence by the Admissions Board. • The qualifying degree has to have been passed with an average grade higher or equal to B (or a final grade higher or equal to B) according to the ECTS grading system. This corresponds to a grade of up to **2.8** in the German grading scale, **84/110** in the Italian grading scale, and **14** in the French grading scale.
Language requirements	Valid English language certificate (at least level B2) or an equivalent proof (e.g. native speaker). In case of a missing certificate, an interview will be arranged to assess the applicant's English level.

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Submit application to	Details regarding the enrolment/application procedure can be found on the IMAPP website as the procedure differs depending on where the Bachelor's degree (or equivalent) was obtained.

Services

Accommodation	Students of the IMAPP programme are eligible for rooms in the student dorms at the three universities. In case the dorms are fully booked, the IMAPP team will provide guidance on how to find housing.
Support for international students and doctoral candidates	• Tutors • Specialist counselling • Visa matters • Support with registration procedures

Our Partners

ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

UNIVERSITÉ
Clermont
Auvergne

IMAPP ©

International Master:
Advanced Methods in
Particle Physics
(IMAPP)

International – innovative – unique

» more:
https://www.youtube.com/watch?v=MWBCLUnwADY

TU Dortmund University

View of the Math Tower

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A university with a unique profile: Since its founding in 1968, TU Dortmund University has developed a special profile encompassing 17 departments ranging from science and engineering to social sciences and cultural studies. The university has more than 30,000 students and 6,500 employees, including 300 professors.

TU Dortmund University has a strong focus on research. The university's departments, e.g. mechanical engineering (with its emphasis on production and logistics), physics, biochemical and chemical engineering, statistics and computer science, and education research, are well known for their outstanding research achievements both nationally and internationally.

Students at TU Dortmund University can choose from classical subjects and innovative courses of study such as medical physics or degree programmes in spatial planning, statistics, and journalism. A particular focus is on teacher training. TU Dortmund University is one of only a few universities in Germany that offers professional teaching qualifications for all types of schools.

University location

With around 6,500 employees, TU Dortmund University is one of Dortmund's largest employers and has helped drive the transformation of the city and the Ruhr region from Europe's largest coal mining and steel production area into a high-tech and service location as well as a cultural metropolis.

Dortmund is located in the heart of Europe. It is the largest city in the Ruhr region and is home to the Borussia Dortmund (BVB) soccer club. All of this contributes to the many advantages that will make studying in Dortmund an unforgettable experience. Apart from destinations for football fans, there are many other places of interest to discover in Dortmund and the Ruhr region.

Of particular importance for the development of the region is the University Alliance Ruhr (UA Ruhr), in which TU Dortmund University, the University of Duisburg-Essen, and Ruhr University Bochum joined forces more than a decade ago. Since the founding of the UA Ruhr, the Ruhr area has developed into one of the strongest science regions in Germany.

Contact

TU Dortmund University
Department of Physics

Prof Dr Kevin Kröninger

44227 Dortmund

info@imapp.eu
Course website: https://imapp.eu

https://www.facebook.com/IMAPPparticlephysics/

https://twitter.com/imapp_in

https://www.instagram.com/advancedmethodsparticlephysics/

https://www.youtube.com/channel/UCgtCXbZ9ABbCOvmTk7hrHzA

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International Programmes in Germany - Database

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DAAD - Deutscher Akademischer Austauschdienst e.V.
German Academic Exchange Service
Section K23 – Information on Studying in Germany
Kennedyallee 50
D-53175 Bonn
www.daad.de

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