Registration form for Polish research institution

1. **Research institution data** (name and address):
   Faculty of Mathematics, Informatics and Mechanics
   University of Warsaw
   Krakowskie Przedmieście 26/28
   00-927 Warszawa
2. **Type of research institution**[1]:
   1) higher education institution
3. **Head of the institution**:

   Prof. dr hab. Alojzy Z. Nowak

4. **Contact information of designated person(s) for applicants and the NCN: first and last name, position, e-mail address, phone number, correspondence address:**
   Prof. dr hab. Anna Gambin,
   Deputy dean of research and international cooperation,
   Faculty of Mathematics, Informatics and Mechanics,
   Banacha 2 02-097 Warsaw, 22 55 44 566,
   A.Gambin@mimuw.edu.pl

5. **Research discipline in which the strong international position of the institution ensures establishing a Dioscuri Centre**:
   MATHEMATICS

6. **Description of important research achievements from the selected discipline from the last 5 years including a list of the most important publications, patents, other** (*up to one page in A4 format*):

   The institution and its faculty. MIM UW is the leading Polish department of mathematics and one of the islands of excellence on the map of Polish science. Our strength arises not only from past achievements, but also from ongoing scientific activities that attract new generations of young mathematicians from the whole of Poland.

   The following is a non-exhaustive list of important results published no earlier than 2018 obtained by mathematicians from MIM UW.
   Research articles based on these results have appeared or will appear in, among other venues, *Ann. of Math., Invent. Math., J. Eur. Math. Soc., Duke Math. J.,*

1 As specified in "Addressees of the call"

Arch. Ration. Mech. Anal., Adv. Math., Comm. Math. Phys., Geom. Topol., J. Mach. Learn. Res.

Employees of MIM UW have also recently published in e.g. *IMRN, J. Math. Pures Appl., J. Algebraic Geom., J.Diff. Equations, J. Funct. Anal., Proc. Lond. Math. Soc., Trans. Amer. Math. Soc., Found. Comput. Math., Geom. Funct. Anal., Comm Pure Appl. Math, PLOS Comp. Biol.*

Mariusz Koras with a collaborator proved the well-known Coolidge-Nagata Conjecture concerning rational cuspidal curves, dating back to the 1950s (published in: Mariusz Koras, Karol Palka, The Coolidge-Nagata Conjecture, Duke Mathematical Journal 166(16) (2017), 3085-3145).

Joachim Jelisiejew showed that a version of Murphy's law holds up to retraction for Hilbert schemes of points. In particular, this answered a question of Fogarty from 1968 (published in: Joachim Jelisiejew, Pathologies on the Hilbert scheme of points, Inventiones Mathematicae 220 (2020), no. 2, 581–610).

Witold Marciszewski with a collaborator gave the first examples of compact spaces providing a negative answer to a question of Cabello Sánchez, Castillo, Kalton and Yost (CCKY problem) and obtain, and give a positive number to the question in a number of cases (published in: Witold Marciszewski, Grzegorz Plebanek, Extension operators and twisted sums of c_0 and C(K) spaces, Journal of Functional Analysis 274 (2018), no. 5, 1491–1529; Antonio Avilés, Witold Marciszewski, Grzegorz Plebanek, Twisted sums of c_0 and C(K)-spaces: a solution to the CCKY problem, Advances in Mathematics 369 (2020), 107168, 31 pp).

P. Mucha and R. Danchin have proved basic mathematical results for the incompressible Navier-Stokes system in vacuum which solved an open problem posed by Fields medal winner P.L. Lions.

7. List of no more than 3 important research projects from the selected discipline awarded in national and international calls to the institution in the last 5 years (title, name of PI, source of funding, amount of funding):

1. *Estimates of random vectors and processes,*

   PI: prof. Rafał Latała,

   National Science Centre Project MAESTRO,

   budget: 1.513.800 pln

2. *Effectiveness of infection control strategies against intra- and inter-hospital transmission of multidrug-resistant Enterobacteriaceae – insights from a multi-level mathematical Network model,*

   PI: dr hab. Monika Piotrowska,

   JPI-EC-AMR project,

   budget: 1.047.068 pln

3. *Algebraic operations of the torus: geometry and combinatorics*

   PI: prof. dr hab. Jarosław Wiśniewski

   National Science Centre Project BEETHOVEN,

   budget: 895.921 pln

8. **Description of the available laboratory and office space for the Dioscuri Centre** (*up to one page in A4 format*):

   The unique location of Faculty of Mathematics, Informatics and Mechanics of the University of Warsaw at the Ochota campus surrounded by the departments of Physics, Chemistry, Biology, and several excellent institutes of Polish Academy of Sciences, fosters fruitful interdisciplinary cooperation.

   Computational resources allocated for Dioscuri Centre comprise air-conditioned server rooms as well as computer laboratory with number of PCs. Overall surface is around 70 square meters

   Office space allocated for Dioscuri Centre consists of:

   - 3 single person office rooms (12 square meters),
   - 2 double office rooms (20 square meters),
   - 1 office room for Phd students (40 square meters),
   - 1 administrative office (288 square meters) and other necessary facilities.

9. **List of the available research equipment for the Dioscuri Centre:**

   The computing infrastructure of the Faculty of Mathematics, Informatics and Mechanics of the University of Warsaw includes servers with sufficiently high power to allocate resources for all research groups created within the framework of Dioscuri Call. To renew and maintain the infrastructure we use funds from a number of other projects carried out at the Faculty.

10. **List of the additional benefits (other than listed in call text) that the Institution declares to provide for the Dioscuri Centre (i.e.: additional funds, personal benefits, other)** (*up to one page in A4 format*):

Additional benefits for researchers of Dioscuri Centre include professional service supporting the research activity. The employees of Research Support Office and Financial Section provide advice and assistance with the realization of the project.

The extensive support on management of the project covers all financial and reporting issues, as well as the organization of small and medium-size scientific meetings.

MIM UW department collaborates with the University's technology transfer office that are responsible for assisting researchers to protect and commercialise their Intellectual Property potentially resulted from the research activity of Dioscuri Centre.

Moreover, additional funding will be provided by Dean of MIM UW to support small scientific meetings, workshops and individual research visits organized by Dioscuri Centre.

MIM UW department have an excellent pool of undergraduate and graduate students (each year 50-60 laureates of Mathematics and Computer Science Olympiad choose to study here).

Last but not least, the researchers of Dioscuri Centre are eligible to use the University Sports Centre located on Banacha Street. The extensive facilities include: competition-standard swimming pool and climbing wall.

11. **Other information about the internationalisation of the research institution, international researchers employed at the institution, the availability of English language seminars etc**. (*up to one page in A4 format*):

Employees of the department are involved in top-level mathematical research, which by its very nature takes place in an international community. Mathematicians from MIM UW have hundreds of collaborators from around the world, regularly publish their work in internationally recognized journals (including such leading journals as the Annals of Mathematics and Inventiones Mathematicae) and are frequently invited as speakers to major international conferences.

Some long-term members of the faculty are foreign-born (J. Noble and B. Warhurst). Many more mathematicians from outside of Poland come to MIM UW as postdoctoral researchers. In recent years, support for postdoctoral positions has come mostly from the Warsaw Centre of Mathematics and Computer Science (WCMCS, www.wcmcs.edu.pl, a consortium consisting of MIM UW and the Institute of Mathematics of the Polish Academy of Science), which in the years 2012-2017 had the status of a National Scientific Leadership Centre along with associated funding. Other sources of support have included ERCIM (the European Research Consortium for Informatics and Mathematics, www.ercim.eu) and individual grants, such as J. Wiśniewski's "Maestro" project in algebraic geometry.

Overall, in the last 5 years over 20 mathematicians from more than 10 countries (not including Poland) have visited MIM UW as postdocs. On the other hand, young members of the faculty are expected to spend some time on postdoctoral stays in internationally recognized research centres.

Mathematicians from MIM UW also actively involved in the organization of international conferences. In a typical year, employees of the department are among the organizers of a double-digit number of large and medium-sized mathematical conferences, all with a significant international presence, and many more small meetings and workshops. In recent years, the number of such small events and of individual research visits to Warsaw was exceptionally high thanks to the additional funding provided by WCMCS.

Many mathematicians employed at the department are holders of grants intended to support cooperation with research groups from specific institutions outside of the country. This includes for instance numerous "Harmonia" grants funded by the National Science Centre and a "Central" grant (funded by the German Academic Exchange Service DAAD) involving MIM UW along with institutions from Germany, Austria and the Czech Republic. Employees of MIM UW have also taken advantage of the Polish-French cooperation programme "Polonium" and the Polish-Italian programme "Canaletto".

Essentially all graduate-level courses at the department are offered in English. Many research seminars have foreign participants and are held in English on a regular basis, while all the others can be held in English whenever there is a non-Polish speaking participant.