**one postdoctoral position
in the scientific project
"Order & Geometry"
financed by NCN and DFG within BEETHOVEN CLASSIC 3 program
Principal Investigators:
Stefan Felsner (TU Berlin) and Piotr Micek (Jagiellonian)**

The BEETHOVEN CLASSIC 3 project "Order and Geometry" is offering a postdoctoral position in the Theoretical Computer Science Department at the Faculty of Mathematics and Computer Science of the Jagiellonian University.

Terms of employment

Selected candidate will be employed as a **full-time researcher** (*pol.* adiunkt). The duration of employment is for **one year** (12 months). The starting date can be any time between 1st of February, 2021 and 1st of September, 2022, up to an agreement between the candidate and the principal investigator. The salary is approx. 7 400 PLN per month pre-tax, which is more than enough for a comfortable life in Kraków. The position comes with no teaching obligations and generous travel budget. Selected candidate will work on problems coming from structural graph theory, combinatorics of posets, and geometric intersection graphs.

Description of the project

Graphs and orders defined by means of geometric objects provide a rich class of examples in combinatorics and graph theory. The geometric intuition often guides through constructions that are complex and complicated otherwise. Moreover, graphs and orders defined in terms of geometric objects model dependencies in optimization problems and theoretical computer science. Within this project we focus on the combinatorial side of this realm. The research is grouped into three lines and each line will be motivated by some notoriously open, long-standing problems such as: (1) What is the best possible bound for the chromatic number of intersection graphs of axis-aligned rectangles in the plane?; (2) Is the queue number of planar graphs bounded? (conjectured by Heath, Leighton and Rosenberg in 1992 and confirmed to be true recently); (3) Is the Boolean dimension of planar posets bounded? (posed by Nešetřil and Pudlak in 1989). These problems exemplify different types of interplay between orders (or orderings) and geometry in combinatorics. The basic concept of our research is to understand and exploit these interplays.

Host and research environment

The position is based at Jagiellonian. There is a number of researchers at the faculty that are active in topics related to the project, e.g. Bartosz Walczak, Andrzej Grzesik, Jakub Kozik. There is also a very strong group of students. The project is led in a cooperation with Stefan Felsner's group at TU Berlin. This assumes a number of bilateral visits and joint research activities. Our most often third-party collaborators within this project are Gwenaël Joret from ULB (Brussels) and Tom Trotter from Georgia Tech (Atlanta).

Requirements

We expect that candidates at the moment of employment hold a PhD degree (received not earlier than in 2015) in either mathematics or computer science and have an excellent background in both of these disciplines, in particular in one or more of the following fields:

- structural graph theory;
- combinatorics of posets;
- geometric intersection graphs.

Applications

An application should include **Curriculum Vitae** that:

- presents an overview of the background and scientific achievements of the candidate;
- lists all the candidate's research works (including not yet published manuscripts);
- gives a list of two or three experienced researchers that may serve as references for the candidate.

In addition, there should be a **signed cover letter** and some other standard declarations/informatio processing forms that are listed in the formal notification: LINK-will-appear-SOON

No research statements are required.

Applications, as well as further questions on both the scientific topic of the project and on formal details of the call procedure should be directed to Piotr Micek: **piotr.micek@gmail.com**
In order to apply for the position candidates should send an e-mail with the documents as attached .pdf files.

Application deadline: December 31, 2021

Applications which do not satisfy the above requirements or are submitted after the deadline will not be considered for the position.

The applications will be evaluated by a selection committee appointed by the Dean of the Faculty of Mathematics and Computer Science, Jagiellonian University. The committee may invite candidate to a meeting, which will be conducted remotely. The results of the competition will be sent to candidates by email on January 15, 2022 the latest.