Heidelberg/Paris/Prague/Warsaw collaboration

➢ Collaboration with

- Sorbonne (Benoit Perthame),

- Charles University (Vit Dolejsi and Josef Malek)

- University of Warsaw (Agnieszka Swierczewska-Gwiazda)

➢ Based on long-term close collaboration of the respective research groups

- Joint PhD programme (coordinatd by Piotr Gwiazda; funded by FNP)

- Exchange of stuff (Simons Professor and other funding schemes in the past) and of PhD students Eg., current joint project between Marciniak-Czochra and Gwiazda ("Twin" PhD students: Christian Düll and Jakub Skrzeczkowski)

- Result of the 2020/21 work – a joint monograph "Spaces of measures and their applications to structured population models", Cambridge Univ. Press)

➢ Joint Master Project in in Mathematics and Applications (coordinated by Vit Dolejsi, Prague)

- Based on the fields of Mathematical Modeling, Scientific Computing and Data Analysis.

- Integration of rigorous mathematics with applications-oriented disciplines.

- Funding : 25 150 EUR

Master Programme Mathematical Modeling

General structure

- joint master study
- first year in institution #1: typically mandatory courses
- second year in institution #2: only optional courses
- one thesis, two supervisors
- common student schools (contact/on-line forms)

Current and next steps

- Pilot teaching project: **Reaction-diffusion equations: From semigroup theory to pattern formation** (Heidelberg)
- Preparing list of courses for students.
- Preparing co-teaching among 4EU universities.

Actions 2020/2021

➤ Winter School on "Modeling of biomaterials", Kacov (Czech Republic), February 10-16, 2020 (organized by Josef Malek, Vit Prusa and Anna Marciniak-Czochra)

➤ List of joint courses in Summer Term 2021

➤ Preparation of the list of joint courses for Winter Term 2022
   - Hybrid format?
   - Administrative problems in Heidelberg

➤ Planned visits of Jakub Skrzeczkowski in Heidelberg (summer 2021), Anna Marciniak-Czochra in Paris (winter 2022) and in Warsaw (autumn 2021), Benoit Perthame, Marie Doumic, Piotr Gwiazda and others in Heidelberg (August/September 2022) (all funded by other sources)

Master Programme in Heidelberg

➤ Master Programme Mathematical Modeling as a part of Master Mathematics

➤ Intensive preparation of a new Master Mathematics of Data Sciences

➤ Revisiting/reworking of the study programme in Analysis (Modeling), Numerical Methods, Optimization and Geometry

➤ More courses in English (the whole master programme in Applied Mathematics)

- New courses: Research-oriented teaching (fitting to the Structures programme)

- Two-stages courses allowing more flexibility

- Joint courses and seminars (inter-mathematics and interdisciplinary)

- Re-organisation of the bachelor programme (checking/adjusting modules)

➤ Advantages of the joint programme:

- Enlarged list of courses

- Attracting excellent foreign students

- Encouraging mobility of the Heidelberg students