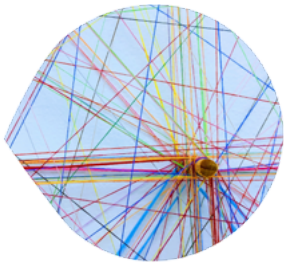
Theme B: Mathematical challenges for humanity



This part of the programme will host collaborative projects, workshops, seminars, courses, and schools of varying lengths dealing directly with possibilities for contribution by mathematicians to the challenges facing humanity.

These could include:

- Epidemiology and medical statistics;
- Mathematical geoscience and the protection of the environment;
- Safeguarding artificial intelligence and data science;
- Mathematical models of circular economies;
- Sustainable and equitable finance;
- Networks, voting, and democracy;
- The mathematics of energy systems;
- Improving communication of risks and other statistical information;
- Tipping points and ‘tipping elements’ in the Earth’s climate system
- The creation of high-quality open-access climate simulation software

Proposals that address positive social change within the mathematical sciences and its interface with socio-political challenges will also be appropriate for this project. Obviously, the possibilities for proposals are not limited to the examples provided.

A basic model for the programme is ‘groups of groups’. That is, groups of 3-6 researchers should apply to the programme with a research project of at most three-months duration in mind, following the pattern of the research-in-groups programme. This could be supplemented by a programme for the dissemination of ideas, taking the form of research workshops, a course, a seminar series, or a school, most of which should be made available in a hybrid format to a wide public. A key point will be that several focussed research groups will be able to gather at the ICMS, who will be expected to interact and share ideas. The goal is to marshal energy and establish new connections by having several small groups working on different but related problems present during overlapping periods.