Plenary Lectures
Conférences plénières

VINCENT BOUCHARD, University of Alberta
Airy structures: a new connection between geometry, algebra and physics

Modern physics involves beautiful and intricate mathematics, and entirely new mathematical structures often emerge from physical theories. An example of this is the concept of Airy structures, which was first introduced by Kontsevich and Soibelman in 2017 as an algebraic reformulation and extension of the Chekhov-Eynard-Orantin topological recursion. One can also think of Airy structures as a wide generalization of Witten's conjecture; as such, it provides a fascinating new connection between enumerative geometry, algebra and integrable systems. In this talk I will introduce the concept of Airy structures, mention some recent applications of the theory to enumerative geometry, vertex operator algebras and gauge theories, and discuss potential generalizations and open questions. My hope with this talk is to convey why I believe that the formalism of Airy structures (and topological recursion) should be in the toolbox of all geometers, algebraists and mathematical physicists!

DÉBORAH OLIVEROS, Unidad Juriquilla del Instituto de Matemáticas UNAM
From classical geometry to new constructions of bodies of constant width

Bodies of constant width are geometric objects with incredible properties that have fascinated mathematicians from centuries; L. Euler for instance, studied them under the name of "orbiforms" from the Latin word circle-shaped curves. Their properties have not only contributed in generating great applications in the areas of engineering, design and art, but have also motivated the development of great mathematics with unimaginable possibilities that have relation with many interesting open questions.