--**Schedule**--

10:00 - 10:30: Introduction to Tropicalization (Kevin)
10:40 - 11:10: Introduction to Matroids and Bergman Fans (Stefan)
11:30 - 12:30: Cremona symmetries of matroid fans (Stefan)

  Lunch Break

14:00 - 15:00: Buildings, valuated matroids, and tropical linear spaces (Kevin)
15:10 - 15:40: A 30 Minute Overview of Anabelian Geometry (Tim)

  Coffee and Cookies

16:20 - 17:20: The higher-dimensional real section conjecture in anabelian geometry (Tim)
17:30 - 18:00: Organization, next Symposium, etc.

  Social Evening in the Mathebau

--**Abstracts**--

Stefan Rettenmayr: Cremona symmetries of matroid fans

Abstract: A matroid can be represented geometrically by its Bergman fan and we compare the automorphism groups of these two objects. Sometimes, the Bergman fan has additional automorphisms, which are related to Cremona transformations in projective space. Their existence depends on a combinatorial property of the matroid, as has been shown by Shaw and Werner, and we study the consequences for the structure of such matroids. This allows us to gain a better understanding of the so-called Cremona group of a matroid and we apply our results to root system matroids.

Kevin Kühn: Buildings, valuated matroids, and tropical linear spaces

Abstract: Affine Bruhat-Tits buildings are geometric spaces extracting the combinatorics of algebraic groups. The building of PGL parametrizes flags of subspaces/lattices in or, equivalently, norms on a fixed finite-dimensional vector space, up to homothety. It has first been studied by Goldman and Iwahori as a piecewise-linear analogue of symmetric spaces. The space of seminorms compactifies the space of norms and admits a natural surjective restriction map from the Berkovich analytification of projective space that factors the natural tropicalization map. Inspired by Payne's result that the analytification is the limit of all tropicalizations, we show that the space of seminorms is the limit of all tropicalized linear embeddings $\iota: Pr \hookrightarrow Pn$ and prove a faithful tropicalization result for compactified linear spaces. The space of seminorms is in fact the tropical linear space associated to the universal realizable valuated matroid.

Tim Holzschuh: The higher-dimensional real section conjecture in anabelian geometry.

Abstract: First, I will explain why the étale fundamental group alone is inadequate to study the anabelian behaviour of (many) higher-dimensional varieties.
I will then suggest an alternative invariant, the étale homotopy type, that I claim to be more well-equipped to handle higher-dimensional geometry.
Finally, I will attempt to demonstrate how one can use the étale homotopy type to prove that any geometrically étale simply connected variety over R satisfies the section conjecture.