Speaker:
Franz-Viktor Kuhlmann, University of Szczecin, Poland

Title:
Density of various subsets in spaces of places of function fields, and applications to real holomorphy rings

Abstract:
Density results for suitable subsets in spaces of places of algebraic function fields have been applied to study holomorphy rings as well as several other problems about places on function fields. One way of proving them is via model theoretic tools: Ax-Kochen/Ershov principles when we deal with fields of characteristic 0, and the model theory of tame fields in arbitrary characteristic. I will describe the development of these results and their applications starting from [1] up to my joint work [2] with Eberhard Becker and Katarzyna Kuhlmann. In the latter, the density of the subset of all $\mathbb{R}$-places of a function field F over a real closed field K that factor over the natural $\mathbb{R}$-place of K plays a central role. I will sketch the results that are proven using this density, and some earlier work that had been done in the case of transcendence degree 1.

[1] Kuhlmann, F.-V. – Prestel, A.: *On places of algebraic function fields*, J. reine angew. Math. **353** (1984), 181–195

[2] Becker, E. - Kuhlmann, F.-V. - Kuhlmann, K.: *Density of Composite Places in Function Fields and Applications to Real Holomorphy Rings*, Mathematische Nachrichten **296** (2023), 57–79