



Vienna School
of Mathematics

PhD Colloquium

Johanna Brunar

An Algebraist lost in Computer Science

Abstract: A central concern of universal algebra is the representation of structural properties of an algebra in logical notions and vice versa. Birkhoff's HSP-Theorem (Birkhoff 1935) may be considered as a starting point for enquiries of this kind. The systematic study of identities satisfied by classes of (finite) algebras has been a fundamental part of research ever since. Recently, universal algebra has moreover enjoyed a revivification of attention also by other scientific fields due to a new, algebraic approach to the computational complexity of Constraint Satisfaction Problems (CSPs). As it turns out, the satisfaction of certain specific identities constitutes the exact borderline between polynomial-time solvability and NP-hardness of finite-domain CSPs (Bulatov, Zhuk 2017). Could algebra, in the end, provide the key to resolving P versus NP?

November 17, 2025, 15:30-16:30

TUForMath-Room, DAEGH18

Freihaus, TU Wien

(Wiedner Hauptstraße 8)