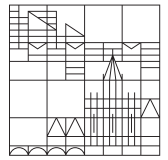


KWIM-Festtage

celebrating the end of the project
Konstanz Women in Mathematics

Universität
Konstanz



Automorphism groups of Hahn groups and Hahn fields

Michele Serra

University of Konstanz, Germany

Abstract. Consider the field $K = \mathbb{R}((t))$ of formal Laurent series with real coefficients. A way of producing automorphisms of K is to combine an automorphism of \mathbb{R} with one of the ordered group $(\mathbb{Z}, +, <)$ of exponents. These are called *external automorphisms*, denoted by $\text{Ext Aut } K$. On the other hand, any automorphism of K induces automorphisms on \mathbb{R} and $(\mathbb{Z}, +, <)$. Hence we also have a map

$$\Phi : \text{Aut } K \rightarrow \text{Aut } \mathbb{R} \times \text{Aut}(\mathbb{Z}, +, <)$$

whose kernel is given by the *internal automorphisms* and denoted by $\text{Int Aut } K$. These were studied and described by Schilling in 1944. Later, Hofberger showed that $\text{Aut } K \simeq \text{Int Aut } K \rtimes \text{Ext Aut } K$, allowing a complete description of the automorphism group in the case of Laurent series.

Using the results of Schilling as a spur, we apply similar methods to extend the study to order-preserving automorphism groups of Hahn groups and Hahn fields (fields of generalised formal power series).