Automorphism groups of Hahn fields and the canonical lifting property

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Hahn fields are fields of generalised power series. In some particular cases, their automorphism groups have been studied successfully, e.g., Schilling described the (internal) automorphism group of the field of Laurent series, using methods from valuation theory. Inspired by his work, we extend the methods to more general Hahn fields.

Our results become much more effective if we focus on the special subfields satisfying what we will call the *canonical lifting property* (CLP). This allows first fundamental steps in describing the structure of the automorphism group, namely decomposing it canonically into a semidirect product.

We also investigate a wide class of subfields, introduced by Rayner, and give a criterion for them to satisfy the CLP.

This is part of my PhD project, supervised by Salma Kuhlmann.

References

[1] O. F. G. Schilling, Automorphisms of fields of formal power series, *Bull. Amer. Math. Soc.* **50** (1944), pp. 892–901.