Automorphism groups of lexicographically ordered chains, Hahn groups and fields.

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Abstract: Any automorphism of the exponent chain Γ combined with one of the base chain Δ induces an automorphism of the lexicographic chain Δ^Γ. This defines a a homomorphism from the automorphism group of Δ^Γ onto the semidirect product of the automorphism groups of Γ and Δ. We study the image and kernel of this homomorphism. The kernel is the normal subgroup consisting on internal automorphisms. Ordered Hahn groups and fields (i.e. fields of generalized power series) are supported on lexicographic chains. Inspired by Schilling's work [O. F. G. Schilling. *Automorphisms of fields of formal power series.* Bull. Amer. Math. Soc. 50.12 (1944), pp. 892-901] on the study of internal automorphisms of the field of Laurent series, we extend our investigation to ordered group automorphisms, respectively ordered field automorphisms of Hahn groups respectively Hahn fields.