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Title: On homomorphisms of an abelian group into the group of invertible formal power series

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We study solutions of the translation equation in rings of formal power series $\mathbb{K}[\![X]\!]$, $\mathbb{K} \in \{\mathbb{R}, \mathbb{C}\}$ (the so called one-parameter groups or flows), and even, more generally, homomorphisms Θ from an abelian group $(G, +)$ into the group $(\Gamma, \circ)$ of invertible power series in $\mathbb{K}[\![X]\!]$. This problem can equivalently be formulated as the question of finding homomorphisms Φ from $(G, +)$ into the differential group $L^1_\infty = (Z_\infty, \cdot)$ describing the chain rules of higher order of C^∞-functions with fixed point 0. We prove the general form of the homomorphisms $\Theta : G \to \Gamma$, $\Theta(t) = \sum_{k=1}^{\infty} c_k(t) X^k$ and $\Phi : G \to Z_\infty$, $\Phi = (f_n)_{n \geq 1}$, for which c_1 and f_1 take infinitely many values (Theorems **??** and **??**). These representations use sequences $(P_n)_{n \geq 2}$ of universal polynomials in c_1, and $(v_n)_{n \geq 2}$ of universal polynomials in f_1, and some sequences of parameters, which determine the individual homomorphism. We describe the connection between these forms of the homomorphisms. These results are deduced from the special case $|f_1| \neq 1$ (Theorem **??**) and the case when c_1 is a regular function (Theorem **??**).

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