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**Title:** Algebraic approach to equivariance of solutions for an iterative equation

**Author(s):** Weinian Zhang and Bing Xu

Describing the symmetry of a mapping by equivariance with respect to a linear transformation group, the reference [Proc. Roy. Soc. Edinburgh **A130** (2000), 1153–1163] gave the existence of equivariant solutions of the polynomial-like iterative equation under the action of topologically finitely generated subgroups of  $GL(\mathbb{R})$  on  $\mathbb{R}$  and the orthogonal group  $\mathbf{O}(N)$  on  $\mathbb{R}^N$  ( $N \geq 2$ ). In this paper, based on the algebraic structure of closed subgroups of  $GL(\mathbb{R})$ , we prove the equivariance of solutions on  $\mathbb{R}$  with respect to closed subgroups of  $GL(\mathbb{R})$  and extend the result of  $\mathbf{O}(N)$ -equivariance of solutions to the group  $\mathbf{O}(N) \times \langle c\mathcal{I}_N \rangle$  on  $\mathbb{R}^N$ .

**Address:**

Weinian Zhang  
Yangtze Center of Mathematics and Department of Mathematics  
Sichuan University  
Chengdu, Sichuan 610064  
P.R. China

**Address:**

Bing Xu  
Yangtze Center of Mathematics and Department of Mathematics  
Sichuan University  
Chengdu, Sichuan 610064  
P.R. China  
*E-mail:* xb0408@yahoo.com.cn; xb0408@sohu.com