PERIODIC SOLUTIONS
TO REVERSIBLE SECOND ORDER AUTONOMOUS SYSTEMS
WITH COMMENSURATE DELAYS

Zalman Balanov — Fulai Chen
Jing Guo — Wieslaw Krawcewicz

This work is dedicated to the memory of Professor Andrzej Granas

Abstract. Existence and spatio-temporal patterns of periodic solutions to second order reversible equivariant autonomous systems with commensurate delays are studied using the Brouwer $O(2) \times \Gamma \times \mathbb{Z}_2$-equivariant degree theory, where $O(2)$ is related to the reversing symmetry, Γ reflects the symmetric character of the coupling in the corresponding network and $\mathbb{Z}_2$ is related to the oddness of the right-hand side. Abstract results are supported by a concrete example with $\Gamma = D_6$ – the dihedral group of order 12.

1. Introduction

1.1. Subject and goal. Existence of periodic solutions to equivariant dynamical systems together with describing their spatio-temporal symmetries constitute an important problem of equivariant dynamics (see, for example, [10], [11]