# Periodic stationary solutions of the Nagumo lattice differential equation: existence regions and their number

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## Abstract

The Nagumo lattice differential equation admits stationary solutions with arbitrary spatial period for sufficiently small diffusion rate. The continuation from the stationary solutions of the decoupled system (a system of isolated nodes) is used to determine their types; the solutions are labelled by words from a three-letter alphabet. Each stationary solution type can be assigned a parameter region in which the solution can be uniquely identified. Numerous symmetries present in the equation cause some of the regions to have identical or similar shape. With the help of combinatorial enumeration, we derive formulas determining the number of qualitatively different existence regions.