

DETERMINISTIC CHAOS IN FORESTS

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Abstract: *A forest is a chaotic non-linear dynamic system. The rules of forest growth are complex equations of growth and development. The solutions are complex numbers, while their mapped forms are dendrograms in which vertical directions show amplitudes or multidimensional vectors. Horizontal directions show space and time. Complex numbers are sets that represent possible physical states and form an abstract complex vector space of growth and increment. Integration of complex numbers results in increment and further integration results in the growth of diameter and height structure. Complex numbers are the topological dimension of a forest, while sets of complex numbers are the fractal dimension of a forest. Complex equations are qualitative models for quantitative, numerical predictions of forest growth and development. Nature obeys relatively few basic laws. The laws of forest growth and development are complex equations and universal tools for modeling multidimensional forest dynamics.*

Key words: *deterministic chaos, complex equations, complex numbers, dendrograms*



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