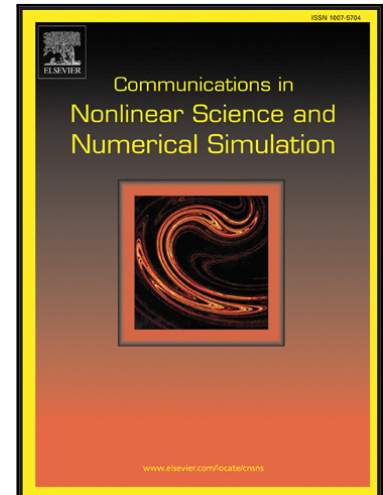


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Non-systemic transmission of tick-borne diseases: a network approach.

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**Highlights**

- we use networks to describe heterogeneous aggregation of ticks on hosts
- non-systemic transmission between ticks feeding on hosts is mathematically described
- we analytically define a threshold condition for the pathogen persistence
- we demonstrate that the variability of aggregation of ticks enhances the spreading
- analytic results, numerical integrations, and simulations are in good agreement

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