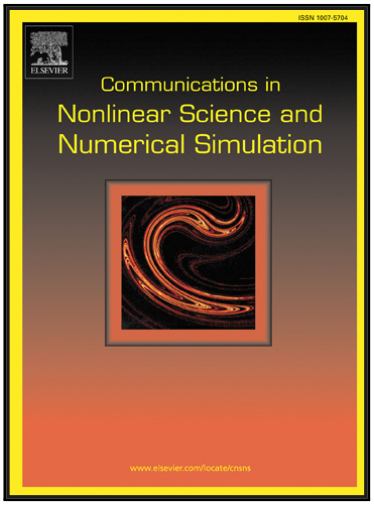

Takens–Bogdanov bifurcations of equilibria and periodic orbits in the Lorenz system

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Highlights

- We study Lorenz system in a region with negative parameters and physical interest.
- A Takens-Bogdanov bifurcation of equilibria is analyzed.
- Torus and Takens-Bogdanov bifurcations of periodic orbits are detected.
- Several codimension-two and three global bifurcations act as organizing centers.
- Some conclusions on the Chen and Lü systems are also trivially obtained.