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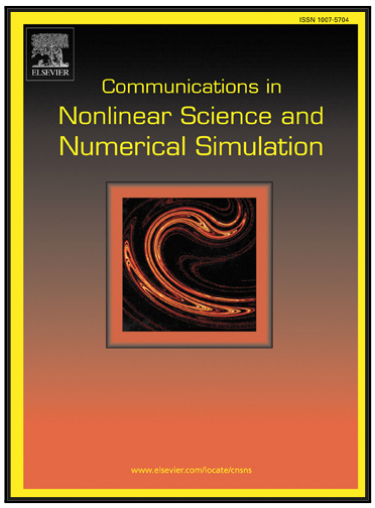

Hamiltonian model and dynamic analyses for a hydro-turbine governing system with fractional item and time-lag

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Highlights:

- This paper addresses a hydro-turbine governing system with fractional item and time-lag.
- We put the system to the framework of the generalized Hamiltonian system.
- A novel Hamiltonian function to describe detailed energy information is proposed.
- The laws of the system parameters varying with fractional order is studied.
- The laws of the system parameters varying with time lag is studied.
- The difference between fractional calculus and time-lag are discussed in nature.

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