

## Accepted Manuscript

Multiscale transfer entropy: measuring information transfer on multiple time scales

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PII: S1007-5704(18)30060-1  
DOI: [10.1016/j.cnsns.2018.02.027](https://doi.org/10.1016/j.cnsns.2018.02.027)  
Reference: CNSNS 4458



To appear in: *Communications in Nonlinear Science and Numerical Simulation*

Received date: 13 April 2017  
Revised date: 31 January 2018  
Accepted date: 20 February 2018

Please cite this article as: Xiaojun Zhao, Yupeng Sun, Xuemei Li, Pengjian Shang, Multiscale transfer entropy: measuring information transfer on multiple time scales, *Communications in Nonlinear Science and Numerical Simulation* (2018), doi: [10.1016/j.cnsns.2018.02.027](https://doi.org/10.1016/j.cnsns.2018.02.027)

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**Highlights**

- A novel multiscale transfer entropy (MTE) is introduced.
- A time-delayed multiscale transfer entropy (TMTE) is proposed to minimize the finite size effects and spurious detection of causality.
- The MSTE can identify directional, dynamical and scale-dependent information flow of time series.
- Extensions of the MSTE method are explored.
- The new methods are effective to characterize information flows for the VAR models, ARFIMA processes, Rossler systems, and stock markets.

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