A Letters Journal Exploring the Frontiers of Physics

OFFPRINT

Testing time series irreversibility using complex network methods

Jonathan F. Donges, Reik V. Donner and Jürgen Kurths

EPL, **102** (2013) 29902

epl

A Letters Journal Exploring the Frontiers of Physics

AN INVITATION TO SUBMIT YOUR WORK

www.epljournal.org

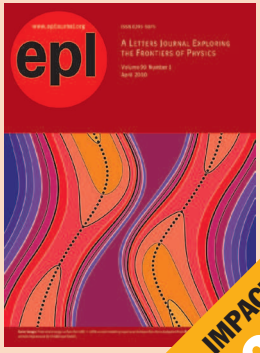
The Editorial Board invites you to submit your letters to EPL

EPL is a leading international journal publishing original, high-quality Letters in all areas of physics, ranging from condensed matter topics and interdisciplinary research to astrophysics, geophysics, plasma and fusion sciences, including those with application potential.

The high profile of the journal combined with the excellent scientific quality of the articles continue to ensure EPL is an essential resource for its worldwide audience. EPL offers authors global visibility and a great opportunity to share their work with others across the whole of the physics community.

Run by active scientists, for scientists

EPL is reviewed by scientists for scientists, to serve and support the international scientific community. The Editorial Board is a team of active research scientists with an expert understanding of the needs of both authors and researchers.



IMPACT FACTOR 2.753*

*As ranked by ISI 2010

IMPACT FACTOR
2.753*
* As listed in the ISI® 2010 Science Citation Index Journal Citation Reports

OVER
500 000
full text downloads in 2010

30 DAYS
average receipt to online publication in 2010

16 961
citations in 2010
37% increase from 2007

"We've had a very positive experience with EPL, and not only on this occasion. The fact that one can identify an appropriate editor, and the editor is an active scientist in the field, makes a huge difference."

Dr. Ivar Martinv
Los Alamos National Laboratory, USA

Six good reasons to publish with EPL

We want to work with you to help gain recognition for your high-quality work through worldwide visibility and high citations.

1. **Quality** – The 40+ Co-Editors, who are experts in their fields, oversee the entire peer-review process, from selection of the referees to making all final acceptance decisions
2. **Impact Factor** – The 2010 Impact Factor is 2.753; your work will be in the right place to be cited by your peers
3. **Speed of processing** – We aim to provide you with a quick and efficient service; the median time from acceptance to online publication is 30 days
4. **High visibility** – All articles are free to read for 30 days from online publication date
5. **International reach** – Over 2,000 institutions have access to EPL, enabling your work to be read by your peers in 100 countries
6. **Open Access** – Articles are offered open access for a one-off author payment

Details on preparing, submitting and tracking the progress of your manuscript from submission to acceptance are available on the EPL submission website **www.epletters.net**.

If you would like further information about our author service or EPL in general, please visit **www.epljournal.org** or e-mail us at **info@epljournal.org**.

EPL is published in partnership with:

European Physical Society | Società Italiana di Fisica | EDP Sciences | IOP Publishing

A Letters Journal Exploring the Frontiers of Physics

April 2013

EPL, **102** (2013) 29902
doi: 10.1209/0295-5075/102/29902

www.epljournal.org

Erratum

Testing time series irreversibility using complex network methods

Jonathan F. Donges[1,2,3(a)], Reik V. Donner[1] and Jürgen Kurths[1,2,4]

[1] *Potsdam Institute for Climate Impact Research - P.O. Box 601203, 14412 Potsdam, Germany, EU*
[2] *Department of Physics, Humboldt University Berlin - Newtonstr. 15, 12489 Berlin, Germany, EU*
[3] *Stockholm Resilience Centre, Stockholm University - Kräftriket 2B, 11419 Stockholm, Sweden, EU*
[4] *Institute for Complex Systems and Mathematical Biology, University of Aberdeen - Aberdeen AB24 3FX, UK, EU*

Original article: *Europhysics Letters (EPL)*, **102** (2013) 10004.

PACS 99.10.Cd – Errata

Due to a technical problem occurred in production, figs. 4 and 5 were displayed in an erroneous form, *i.e.* some of the panels and the relative labels were positioned in a wrong way. We publish here again the correct figures sincerely apologizing to the authors for the unpleasant inconvenience.

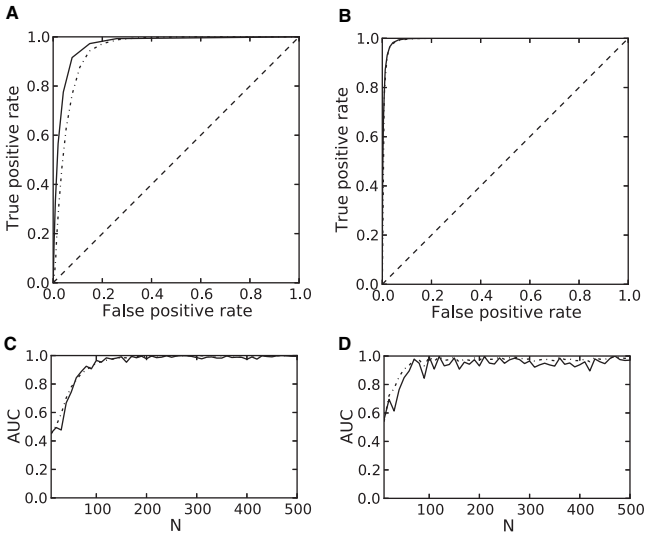


Fig. 4: (A), (B): ROC curves for the ((A), (C)) VG- and ((B), (D)) HVG-based tests for reversibility comparing the rejection rates for each $M = 10000$ realisations of AR1 (false positive rate) and Hénon time series (true positive rate) with varying critical p-value of the KS statistic ($N = 100$). (C), (D): area under the ROC curve (AUC) characterising the discriminative performance of all tests depending on time series length N. Solid and dash-dotted lines indicate degree- and clustering-based tests, respectively.

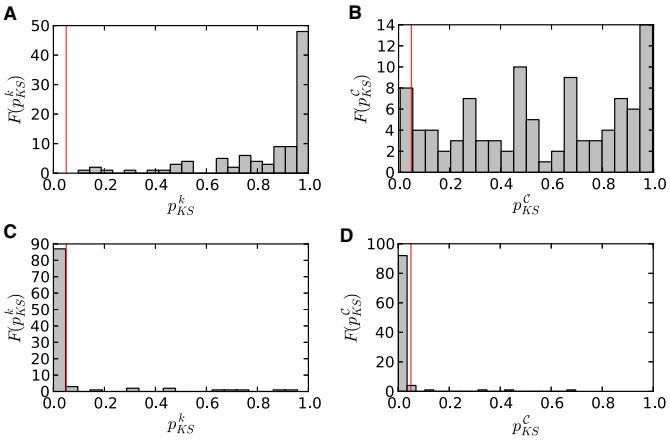


Fig. 5: (Colour on-line) Frequency distributions of p-values of the KS test for comparing the distributions of retarded/advanced degree k^r_i, k^a_i ((A), (C)) and local clustering coefficient $\mathcal{C}^r_i$, $\mathcal{C}^a_i$ ((B), (D)) of standard VGs from a set of $M = 100$ EEG time series segments of length $N = 4096$. Recordings originate from healthy subjects with eyes open (data set A) ((A), (B)) and epileptic patients during seizure (data set E) ((C), (D)). Vertical red lines indicate the chosen significance level of 0.05.

(a) E-mail: donges@pik-potsdam.de