



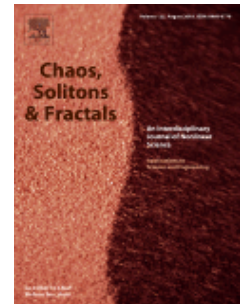
# CHAOS, SOLITONS & FRACTALS

An interdisciplinary journal of nonlinear science

## AUTHOR INFORMATION PACK

### TABLE OF CONTENTS

●	<b>Description</b>	<b>p.1</b>
●	<b>Audience</b>	<b>p.1</b>
●	<b>Impact Factor</b>	<b>p.2</b>
●	<b>Abstracting and Indexing</b>	<b>p.2</b>
●	<b>Editorial Board</b>	<b>p.2</b>
●	<b>Guide for Authors</b>	<b>p.5</b>



ISSN: 0960-0779

### DESCRIPTION

*Chaos, Solitons & Fractals* has an open access mirror journal [Chaos, Solitons & Fractals: X](#), sharing the same aims and scope, editorial team, submission system and rigorous peer review.

*Chaos, Solitons & Fractals* aims to be a leading journal in the **interdisciplinary field of Nonlinear Science**. It encourages the submission of articles concerning the **fundamentals** of the following subjects: **dynamics; non-equilibrium processes in physics; complex matter and networks; computational biology; fluctuations and random processes; self-organization; social phenomena; technology**.

The journal can only accept papers whose primary subject area lies within the above Aims & Scope. In particular, please take notice of the following: In order to be acceptable, manuscripts of more **mathematical nature** should at least attempt a connection to **physical insight or new qualitative features**. The word "Solitons" should be understood as a label especially **extended to all nonlinear integrable systems in complex natural phenomena**. The paper should not bear on some explicit formulae, some standard solutions, constructions, or asymptotic methods. The journal is interested in articles providing strong insights in the **mathematical theory of fractals** that play an important role either in understanding the general theory or are profound for an important **particular application**, especially in **complex systems**. Numerical computations should only assist the developed results. Also welcome are the discovery of new fractals that are crucial for important applications. The subject listing is specified further in the journal's [classification list](#). Authors are required to specify matching classifications upon submission of their work.

Authors are encouraged to link to their data posted in a repository or uploaded to [Mendeley Data](#).

Authors can submit separate research elements describing their data to [Data in Brief](#) and software to [Software X](#).

### AUDIENCE

Engineers, physicists and mathematicians involved in nonlinear sciences, chaos and fractal research.

## IMPACT FACTOR

---

2018: 3.064 © Clarivate Analytics Journal Citation Reports 2019

## ABSTRACTING AND INDEXING

---

Research Alert  
Zentralblatt MATH  
Current Contents - Engineering, Technology & Applied Sciences  
Science Citation Index  
Web of Science  
Mathematical Reviews  
Scopus

## EDITORIAL BOARD

---

### *Editor-in-Chief*

**Stefano Boccaletti**, Research Institute of Complex Systems National Research Council, via Madonna del Piano, 10, 50019, Florence, Italy

### *Editors*

**Ravindra Amritkar**, Physical Research Laboratory, Ahmedabad, India

**Abdon Atangana**, University of the Free State Faculty of Natural and Agricultural Sciences, Bloemfontein, South Africa

**Christian Beck**, Queen Mary University of London School of Mathematical Science, London, United Kingdom

**Stelios Bekiros**, European University Institute Department of Economics, Firenze, Italy

**Mauro Bologna**, University of Tarapaca, Arica, Chile

**Mattia Frasca**, University of Catania Department of Electrical Electronical Engineering and Computer Science, Catania, Italy

**Alexander E. Hramov**, Yuri Gagarin State Technical University of Saratov, Dept. of Automization, Control and Mechatronics, Saratov, Russian Federation

**Dong-Uk Hwang**, National Institute for Mathematical Sciences, Daejeon, Korea, Republic of

**Sarika Jalan**, Indian Institute of Technology Indore Complex Systems Lab, Indore, India

**Stefano Lepri**, Research Institute of Complex Systems National Research Council, Florence, Italy

**Boris A. Malomed**, Tel Aviv University Department of Physical Electronics, Tel Aviv, Israel

**Cristina Masoller**, Polytechnic University of Catalonia, Barcelona, Spain

**Gabriel B. Mindlin**, University of Buenos Aires Department of Physics, Buenos Aires, Argentina

**Yamir Moreno**, University of Zaragoza Institute of Biocomputation and Physics of Complex Systems, Zaragoza, Spain

**Matjaž Perc**, University of Maribor Faculty of Natural Science and Mathematics, Maribor, Slovenia

**Awadhesh Prasad**, University of Delhi Department of Physics and Astrophysics, New Delhi, India

**Bernardo Spagnolo**, University of Palermo Department of Physics and Chemistry, Palermo, Italy

**Trong Tuong Truong**, Laboratory of Theoretical Physics and Modeling, Cergy-Pontoise Cedex, France

**Sandro Vaienti**, Centre for Theoretical Physics, Marseille, France

**Zhen Wang**, Kyushu University Interdisciplinary Graduate School of Engineering Sciences, Kasuga, Japan

### *Focus Issue Editor*

**Stefano Galatolo**, University of Pisa Faculty of Mathematics, Pisa, Italy

### *Associate Editors*

**Jose' Alves**, Universidade do Porto, Department of Mathematics, Porto, Portugal

**Wael Bahoun**, Loughborough University School of Mathematical Sciences, Loughborough, United Kingdom

**Luis Barreira**, University of Lisbon Higher Technical Institute Department of Mathematics, Lisboa, Portugal

**Ginestra Bianconi**, Queen Mary University of London School of Mathematical Science, London, United Kingdom

**Jean-Marie Bilbault**, National Center for Scientific Research Laboratory of Electronics Computer Science and Image, Paris, France

**Anna Carbone**, University of Turin Department of Physics, Torino, Italy

**Giuseppe Carbone**, Polytechnic of Bari Department of Mechanical Engineering Mathematics and Management, Bari, Italy

**Regino Criado**, Universidad Rey Juan Carlos, Dept. of Applied Mathematics, Madrid, Spain

**Alexander Dubkov**, Lobachevsky State University of Nizhni Novgorod Faculty of Radiophysics, Nizhniy Novgorod, Russian Federation

**Dr. Igor Franović**, Center for the Study of Complex Systems, Institute of Physics Belgrade, Serbia

**Jorge Milhazes de Freitas**, University of Porto Department of Mathematics, Porto, Portugal

**Lucia Valentina Gambuzza**, University of Catania Department of Electrical Electronical Engineering and Computer Science, Catania, Italy  
**Thomas Gilbert**, ULB Department of Physics, Bruxelles, Belgium  
**Shuguang Guan**, East China Normal University, Department of Physics, Shanghai, China  
**Jana Rodriguez Hertz**, Southern University of Science and Technology, Department of Mathematics, Shenzhen, China  
**Damian Kelty-Stephen**, Grinnell College, Grinnell, Iowa, United States  
**Alexander Kitaev**, Saint Petersburg Branch of V A Steklov Institute of Mathematics RAS, Sankt Peterburg, Russian Federation  
**Claudia Lainscsek**, The Salk Institute for Biological Studies, The Computational Neurobiology Laboratory (CNL), La Jolla, California, United States  
**Xavier Leoncini**, Centre for Theoretical Physics, Marseille, France  
**Yongyao Li**, Foshan University, School of Physics and Optoelectronic Engineering, Foshan, China  
**Dr. Sylvain Mangiarotti**, Centre d'Etudes Spatiales de la Biosphère (CESBIO), Toulouse, France; Institut de Recherche pour le Développement (IRD), Marseille, France  
**Ludovico Minati**, Tokyo Institute of Technology Institute of Innovative Research, Tokyo, Japan  
**Jan Nagler**, Frankfurt School of Finance and Management, Head, Deep Dynamics Group, Frankfurt am Main, Germany  
**Andrey Pankratov**, Institute for Physics of Microstructures Russian Academy of Science, Nizhny Novgorod, Russian Federation  
**David Papo**, Cognitive and Affective Sciences Laboratory, Lille, France  
**Paolo Paradisi**, Alessandro Faedo Institute of Science and Technology National Research Council, Pisa, Italy  
**Bruno Otávio Teixeira**, Universidade Federal de Minas Gerais (UFMG), Dept. of Electronic Engineering, Belo Horizonte, Brazil  
**Davide Valenti**, University of Palermo Department of Physics and Chemistry, Palermo, Italy  
**Claudia Valls**, University of Lisbon, Lisboa, Portugal  
**Cheng Yi Xia**, Tianjin University of Technology School of Computer Science and Engineering, Tianjin, China

#### ***Managing Editor***

**Jelena Petrovic**, Astronomical Observatory, University of Belgrade, Belgrade, Serbia

#### ***Honorary Editors***

**Maurice Courbage**, University Paris 7 Denis Diderot Faculty of Life Sciences, Paris, France

**Paolo Grigolini**, University of North Texas, Denton, United States

#### ***Editorial Board Members***

**Leonid Bunimovich**, Georgia Institute of Technology, School of Mathematics & College of Computing, Atlanta, Georgia, United States

**Bernard Cazelles**, ENS Department of Biology, Paris, France

**Mario Chavez**, Pitie Salpetriere Hospital, Inst. of Brain and Spinal Cord, Paris, France

**Pierre Collet**, Theoretical Physics Research Centre, Palaiseau, France

**Jean-Louis Deneubourg**, ULB Unit of Social Ecology, Bruxelles, Belgium

**Alain Destexhe**, National Center for Scientific Research, Lab. for Computational Neuroscience, Gif-sur-Yvette, France

**Leone Fronzoni**, University of Pisa Department of Physics, Pisa, Italy

**Jesus Gomez-Gardeñes**, University of Zaragoza Department of Condensed Matter Physics, Zaragoza, Spain

**Sergey Gonchenko**, Nizhny Novgorod State University, Research Inst. of Applied Mathematics and Cybernetics, Nizhny Novgorod, Russian Federation

**Kostya Khanin**, University of Toronto Department of Mathematics, Toronto, Ontario, Canada

**Roberto Livi**, Università degli Studi di Firenze, Centro Interdipartimentale per lo studio di Dinamiche Complesse, Sesto Fiorentino, Italy

**Francesco Mainardi**, University of Bologna Department of Physics and Astronomy, Bologna, Italy

**Adilson E. Motter**, Northwestern University Department of Physics and Astronomy, Evanston, Illinois, United States

**Vladimir I. Nekorkin**, Institute of Applied Physics RAS, Nizhny Novgorod, Russian Federation

**Francesco Pellicano**, University of Modena and Reggio Emilia Department of Engineering Enzo Ferrari, Modena, Italy

**Yakov B. Pesin**, Penn State Department of Mathematics, University Park, Pennsylvania, United States

**Mikhail Rabinovich**, University of California San Diego BioCircuits Institute, La Jolla, California, United States

**Linda Reichl**, The University of Texas at Austin Department of Physics, Austin, Texas, United States

**Joerg Schmeling**, Lund University, Mathematics, Lund, Sweden

**Didier Sornette**, Eidgenössische Technische Hochschule (ETH) Zürich, Dept. of Management, Zurich, Switzerland

**Lev Tsimring**, University of California San Diego BioCircuits Institute, La Jolla, California, United States

**Bruce J. West**, Duke University Department of Physics, Durham, North Carolina, United States

**Lai-Sang Young**, New York University Courant Institute of Mathematical Sciences, New York, New York, United States

***Founding Editor***  
**M.S. El Naschie**

## GUIDE FOR AUTHORS

---

### *Your Paper Your Way*

We now differentiate between the requirements for new and revised submissions. You may choose to submit your manuscript as a single Word or PDF file to be used in the refereeing process. Only when your paper is at the revision stage, will you be requested to put your paper in to a 'correct format' for acceptance and provide the items required for the publication of your article.

**To find out more, please visit the Preparation section below.**

Chaos, Solitons & Fractals: X is the open access mirror journal of Chaos, Solitons & Fractals.

### *Submission checklist*

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

#### **Ensure that the following items are present:**

One author has been designated as the corresponding author with contact details:

- E-mail address
- Full postal address

All necessary files have been uploaded:

*Manuscript:*

- Include keywords
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print

*Graphical Abstracts / Highlights files* (where applicable)

*Supplemental files* (where applicable)

Further considerations

- Manuscript has been 'spell checked' and 'grammar checked'
- All references mentioned in the Reference List are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Internet)
- A competing interests statement is provided, even if the authors have no competing interests to declare
- Journal policies detailed in this guide have been reviewed
- Referee suggestions and contact details provided, based on journal requirements

For further information, visit our [Support Center](#).

### ***PUBLISHING IN CHAOS, SOLITONS & FRACTALS***

#### ***General manuscript requirements***

Chaos, Solitons & Fractals publishes high-quality scientific papers in Nonlinear Science, and Nonequilibrium and Complex Phenomena. To be considered for publication, your manuscript should:

- be scientifically sound;
- represent original results;
- significantly advance the field;
- be of interest to the community;
- reference previous work correctly;
- fall within the scope of the journal;
- be written clearly.

The abstract should contain a summary of the main findings of your work. The introduction should explain the motivation for the work, how this relates to earlier studies (an enumeration of the literature is not sufficient) and explain the novelty of your results. A conclusion section, including a summary of your findings and relating these to the literature, is encouraged but not mandatory for works of a mathematical nature. Furthermore, your manuscript should be prepared according to the technical specifications outlined in these guidelines.

### **Manuscript types and length requirements**

Chaos, Solitons & Fractals publishes regular articles, short communications, reviews, and Feature articles (see below). Short communications have a maximum length of 6 pages in double-column style, or 10 pages in single-column style. Regular articles and reviews have no strict page limitations, but should be written concisely. The editorial office may require authors to shorten their manuscript.

Feature articles should provide an update of recent developments and future challenges in an area of key interest to Chaos, Solitons & Fractals. These articles should be written for a broader audience, and should contain:

A tutorial introduction for the broad community; A compact historical perspective together with pointers to the literature; A discussion on exciting new results and developments; and An outline of future challenges.

Feature articles should be concise, ideally not exceeding 10 pages after typesetting (approximately 20 draft pages).

### **Author benefits**

Publication with Elsevier ensures a wide and rapid dissemination of your work. An online, uncorrected proof (citable via DOI) is available within approximately one week. The final version of your paper will be published on ScienceDirect, Elsevier's leading full-text platform. Submitting your work for publication is made simple with the Elsevier Editorial System (EES). The EES system allows you to track the status of your paper at any time, and has 24/7 helpdesk and live chat support.

Author benefits include a 25% discount on Elsevier books, free offprints, and subscription to CiteAlert, a service which automatically notifies you by e-mail if your work is referenced in a newly published article on ScienceDirect. There are **no page charges** for Chaos, Solitons & Fractals.

### **Peer review process**

Newly submitted manuscripts will first be screened by the co-Editors-in-Chief and the Managing Editor. Manuscripts may be rejected at this stage if they are of insufficient quality or outside the scope of the journal. Manuscripts that do meet the minimal requirements for publication are assigned to one of the co-Editors-in-Chief, who sends the manuscript out for review. Reviewers are selected by the co-Editor-in-Chief on the basis of their expertise, their availability, and such as to avoid possible conflicts of interest. A reviewer is asked to evaluate whether the manuscript is scientifically sound, original, relevant, clear, whether it correctly references previous work, and whether it falls within the scope of the journal. The decision to accept or reject the manuscript, or to ask for a revision, lies with the handling co-Editor-in-Chief.

In keeping with Elsevier's guidelines on potential editorial conflicts of interest, manuscripts (co-)authored by one of the co-Editor-in-Chief will be handled fully by the other co-Editor-in-Chief in an undisclosed review process. Similar disclosure arrangements are made in the case of Associate Editors (co-)authoring a manuscript.

### **Journal layout style**

Publications will normally be typeset in double-column style. This may be changed to single-column style (e.g., for articles with lengthy mathematical formulae) at the editor's discretion. Please submit your manuscript in single-column style and use double line spacing.

### **Ethics in publishing**

Please see our information pages on [Ethics in publishing](#) and [Ethical guidelines for journal publication](#).

### **Declaration of interest**

All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors should complete the declaration of interest statement using [this template](#) and upload to the submission system at the Attach/Upload Files step. If there are no interests to declare, please choose: 'Declarations of interest: none' in the template. This statement will be published within the article if accepted. [More information](#).

## Submission declaration and verification

Submission of an article implies that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, see ['Multiple, redundant or concurrent publication'](#) for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service [Crossref Similarity Check](#).

### Preprints

Please note that [preprints](#) can be shared anywhere at any time, in line with Elsevier's [sharing policy](#). Sharing your preprints e.g. on a preprint server will not count as prior publication (see ['Multiple, redundant or concurrent publication'](#) for more information).

## Use of inclusive language

Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing which might imply that one individual is superior to another on the grounds of race, sex, culture or any other characteristic, and should use inclusive language throughout. Authors should ensure that writing is free from bias, for instance by using 'he or she', 'his/her' instead of 'he' or 'his', and by making use of job titles that are free of stereotyping (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess').

## Authorship

All authors should have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted.

## Changes to authorship

Authors are expected to consider carefully the list and order of authors **before** submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only **before** the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the **corresponding author**: (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed.

Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors **after** the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.

## Copyright

Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see [more information](#) on this). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. [Permission](#) of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has [preprinted forms](#) for use by authors in these cases.

### Elsevier supports responsible sharing

Find out how you can [share your research](#) published in Elsevier journals.

## **Role of the funding source**

You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

### *Funding body agreements and policies*

Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some funding bodies will reimburse the author for the gold open access publication fee. Details of [existing agreements](#) are available online.

## **Open access**

This is an open access journal: all articles will be immediately and permanently free for everyone to read and download. To provide open access, this journal has an open access fee (also known as an article publishing charge APC) which needs to be paid by the authors or on their behalf e.g. by their research funder or institution. Permitted third party (re)use is defined by the following [Creative Commons user licenses](#):

Authors wishing to publish open access can choose to publish open access in Chaos, Solitons & Fractals: X <https://www.journals.elsevier.com/chaos-solitons-and-fractals-x/>, the open access mirror journal of Chaos, Solitons & Fractals. One, unified editorial team manages the peer-review for both titles using the same submission system. The authors choice of publishing model will determine in which journal, Chaos, Solitons & Fractals or Chaos, Solitons & Fractals: X, the accepted manuscript will be published. The choice of publishing model will be blinded to referees, ensuring the editorial process is identical.

### *Green open access*

Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our [open access page](#) for further information. Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before an article becomes freely available to the public. This is the embargo period and it begins from the date the article is formally published online in its final and fully citable form. [Find out more](#).

This journal has an embargo period of 24 months.

### *Elsevier Researcher Academy*

[Researcher Academy](#) is a free e-learning platform designed to support early and mid-career researchers throughout their research journey. The "Learn" environment at Researcher Academy offers several interactive modules, webinars, downloadable guides and resources to guide you through the process of writing for research and going through peer review. Feel free to use these free resources to improve your submission and navigate the publication process with ease.

### *Language (usage and editing services)*

Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the [English Language Editing service](#) available from Elsevier's WebShop.

### *Submission*

Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts source files to a single PDF file of the article, which is used in the peer-review process. Please note that even though manuscript source files are converted to PDF files at submission for the review process, these source files are needed for further processing after acceptance. All correspondence, including notification of the Editor's decision and requests for revision, takes place by e-mail removing the need for a paper trail.



Manuscripts should be submitted electronically using the Elsevier Editorial System (EES) at <http://ees.elsevier.com/chaos>. This system facilitates communication among editors, reviewers, and authors and ensures a rapid and transparent editorial process. Further information on EES may be found at <http://service.elsevier.com/app/home/supporthub/publishing/>.

### **Electronic file formats**

LaTeX is the preferred file format, but Word documents are also acceptable. Please provide vector-type graphics in EPS or PDF format and bitmap-type graphics in TIFF or PDF format, ensuring sufficient resolution. Although EPS, PDF, and TIFF formats are preferred, artwork in MS Office formats is also supported. See the Electronic artwork section for further instructions on figure preparation.

### **NEW SUBMISSIONS**

Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts your files to a single PDF file, which is used in the peer-review process.

As part of the Your Paper Your Way service, you may choose to submit your manuscript as a single file to be used in the refereeing process. This can be a PDF file or a Word document, in any format or layout that can be used by referees to evaluate your manuscript. It should contain high enough quality figures for refereeing. If you prefer to do so, you may still provide all or some of the source files at the initial submission. Please note that individual figure files larger than 10 MB must be uploaded separately.

#### *References*

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the article number or pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct.

#### *Formatting requirements*

There are no strict formatting requirements but all manuscripts must contain the essential elements needed to convey your manuscript, for example Abstract, Keywords, Introduction, Materials and Methods, Results, Conclusions, Artwork and Tables with Captions.

If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes.

Divide the article into clearly defined sections.

#### *Figures and tables embedded in text*

Please ensure the figures and the tables included in the single file are placed next to the relevant text in the manuscript, rather than at the bottom or the top of the file. The corresponding caption should be placed directly below the figure or table.

### **Peer review**

This journal operates a single blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. [More information on types of peer review.](#)

### **REVISED SUBMISSIONS**

#### *Use of word processing software*

Regardless of the file format of the original submission, at revision you must provide us with an editable file of the entire article. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the [Guide to Publishing with Elsevier](#)). See also the section on Electronic artwork.

To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

#### *LaTeX*

You are recommended to use the Elsevier article class [elsarticle.cls](#) to prepare your manuscript and [BibTeX](#) to generate your bibliography.

Our [LaTeX site](#) has detailed submission instructions, templates and other information.

## Layout of the manuscript for review

For the reviewing process, you are required to use single-column formatting and double line spacing for your submitted manuscript. If you use the LaTeX class file `elsarticle.cls`, include the command `\documentclass[review]{elsarticle}` in the document preamble to typeset your manuscript in the correct style for reviewing.

## Abbreviation

Provide an explanation for every symbol at its first occurrence.

## Symbols, vectors, tensors

Make sure that vectors and tensors are identified in a uniform style throughout the manuscript. Symbols are to be typeset in italic. Provide an explanation for every symbol at its first occurrence.

## Subdivision - numbered sections

Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

## Essential title page information

- **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
- **Author names and affiliations.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.
- **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**
- **Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

## Highlights

Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). You can view [example Highlights](#) on our information site.

## Abstract

A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

## Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

## Formatting of funding sources

List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, please include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

#### *Math formulae*

Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

#### *Footnotes*

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors build footnotes into the text, and this feature may be used. Should this not be the case, indicate the position of footnotes in the text and present the footnotes themselves separately at the end of the article.

#### *Electronic artwork*

##### *General points*

- Make sure you use uniform lettering and sizing of your original artwork.
- Preferred fonts: Arial (or Helvetica), Times New Roman (or Times), Symbol, Courier.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Indicate per figure if it is a single, 1.5 or 2-column fitting image.
- For Word submissions only, you may still provide figures and their captions, and tables within a single file at the revision stage.
- Please note that individual figure files larger than 10 MB must be provided in separate source files. A detailed [guide on electronic artwork](#) is available.

**You are urged to visit this site; some excerpts from the detailed information are given here.**

##### *Formats*

Regardless of the application used, when your electronic artwork is finalized, please 'save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

EPS (or PDF): Vector drawings. Embed the font or save the text as 'graphics'.

TIFF (or JPG): Color or grayscale photographs (halftones): always use a minimum of 300 dpi.

TIFF (or JPG): Bitmapped line drawings: use a minimum of 1000 dpi.

TIFF (or JPG): Combinations bitmapped line/half-tone (color or grayscale): a minimum of 500 dpi is required.

##### **Please do not:**

- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); the resolution is too low.
- Supply files that are too low in resolution.
- Submit graphics that are disproportionately large for the content.

##### *Color artwork*

Please make sure that artwork files are in an acceptable format (TIFF, EPS, PDF or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color on the Web (e.g., ScienceDirect and other sites) regardless of whether or not these illustrations are reproduced in color in the printed version. **For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article.** Please indicate your preference for color in print or on the Web only. For further information on the preparation of electronic artwork, please see <https://www.elsevier.com/artworkinstructions>. Please note: Because of technical complications which can arise by converting color figures to "gray scale" (for the printed version should you not opt for color in print) please submit in addition usable black and white versions of all the color illustrations.

### *Figure captions*

Ensure that each illustration has a caption. A caption should comprise a brief title (**not** on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

### **Tables**

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

### *Citation in text*

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

### *Web references*

As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

### *Data references*

This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

### *Reference to arXiv*

As with unpublished results and personal communications, references to arXiv documents are not recommended in the reference list. Please make every effort to obtain the full reference of the published version of an arXiv document. If a reference to an arXiv document must be included in the references list it should follow the standard reference style of the journal and should include a substitution of the volume and page numbers with 'arXiv:YYMM.NNNN' or 'arXiv:arch-ive/YYMMNNN' for articles submitted to arXiv before April 2007.

### *References in a special issue*

Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

### *Reference management software*

Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support [Citation Style Language styles](#), such as [Mendeley](#). Using citation plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. [More information on how to remove field codes from different reference management software](#).

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:

<http://open.mendeley.com/use-citation-style/chaos-solitons-and-fractals-the-interdisciplinary-journal-of-non>

When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

### Reference formatting

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the article number or pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct. If you do wish to format the references yourself they should be arranged according to the following examples:

### Reference style

**Text:** Indicate references by number(s) in square brackets in line with the text. The actual authors can be referred to, but the reference number(s) must always be given.

**List:** Number the references (numbers in square brackets) in the list in the order in which they appear in the text.

### Examples:

Reference to a journal publication:

[1] Van der Geer J, Hanraads JA, Lupton RA. The art of writing a scientific article. *J Sci Commun* 2010;163:51–9. <https://doi.org/10.1016/j.Sc.2010.00372>.

Reference to a journal publication with an article number:

[2] Van der Geer J, Hanraads JA, Lupton RA. The art of writing a scientific article. *Heliyon*. 2018;19:e00205. <https://doi.org/10.1016/j.heliyon.2018.e00205>

Reference to a book:

[3] Strunk Jr W, White EB. *The elements of style*. 4th ed. New York: Longman; 2000.

Reference to a chapter in an edited book:

[4] Mettam GR, Adams LB. How to prepare an electronic version of your article. In: Jones BS, Smith RZ, editors. *Introduction to the electronic age*, New York: E-Publishing Inc; 2009, p. 281–304.

Reference to a website:

[5] Cancer Research UK. Cancer statistics reports for the UK, <http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/>; 2003 [accessed 13 March 2003].

Reference to a dataset:

[dataset] [6] Oguro M, Imahiro S, Saito S, Nakashizuka T. Mortality data for Japanese oak wilt disease and surrounding forest compositions, *Mendeley Data*, v1; 2015. <https://doi.org/10.17632/xwj98nb39r.1>.

Note shortened form for last page number. e.g., 51–9, and that for more than 6 authors the first 6 should be listed followed by 'et al.' For further details you are referred to 'Uniform Requirements for Manuscripts submitted to Biomedical Journals' (*J Am Med Assoc* 1997;277:927–34) (see also [Samples of Formatted References](#)).

### BibTeX

The bibtex style file `elsarticle-num.bst`, which follows the above specifications, is available via <https://www.elsevier.com/latex>.

### Journal abbreviations source

Journal names should be abbreviated according to the [List of Title Word Abbreviations](#).

### Video

Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including [ScienceDirect](#). Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our [video instruction pages](#). Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

## **Data visualization**

Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions [here](#) to find out about available data visualization options and how to include them with your article.

## **Supplementary material**

Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

## **Research data**

This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project.

Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the [research data](#) page.

### *Data linking*

If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.

There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the [database linking page](#).

For [supported data repositories](#) a repository banner will automatically appear next to your published article on ScienceDirect.

In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

### *Mendeley Data*

This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. During the submission process, after uploading your manuscript, you will have the opportunity to upload your relevant datasets directly to *Mendeley Data*. The datasets will be listed and directly accessible to readers next to your published article online.

For more information, visit the [Mendeley Data for journals page](#).

### *Data in Brief*

You have the option of converting any or all parts of your supplementary or additional raw data into one or multiple data articles, a new kind of article that houses and describes your data. Data articles ensure that your data is actively reviewed, curated, formatted, indexed, given a DOI and publicly available to all upon publication. You are encouraged to submit your article for *Data in Brief* as an additional item directly alongside the revised version of your manuscript. If your research article is accepted, your data article will automatically be transferred over to *Data in Brief* where it will be editorially reviewed and published in the open access data journal, *Data in Brief*. Please note an open access fee of 600 USD is payable for publication in *Data in Brief*. Full details can be found on the [Data in Brief website](#). Please use [this template](#) to write your Data in Brief.

### *Data statement*

To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the [Data Statement page](#).

## **AFTER ACCEPTANCE**

### **Online proof correction**

Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors.

If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.

We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

### **Offprints**

The corresponding author will, at no cost, receive a customized [Share Link](#) providing 50 days free access to the final published version of the article on [ScienceDirect](#). The Share Link can be used for sharing the article via any communication channel, including email and social media. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's [Webshop](#). Corresponding authors who have published their article gold open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

## **AUTHOR INQUIRIES**

Visit the [Elsevier Support Center](#) to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch.

You can also [check the status of your submitted article](#) or find out [when your accepted article will be published](#).

© Copyright 2018 Elsevier | <https://www.elsevier.com>