

MasterClass Itinérante Science Ouverte et Edition Scientifique

Strasbourg - 19-20 juin 2023



Publier un article II: Comment écrire un article

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EDP Sciences



EDP Sciences is an international scientific publishing company based in France.

It was established in 1920 by a prestigious academic community of French learned societies. Members of this community included eminent scientists like Marie Curie, Paul Langevin and Louis de Broglie.

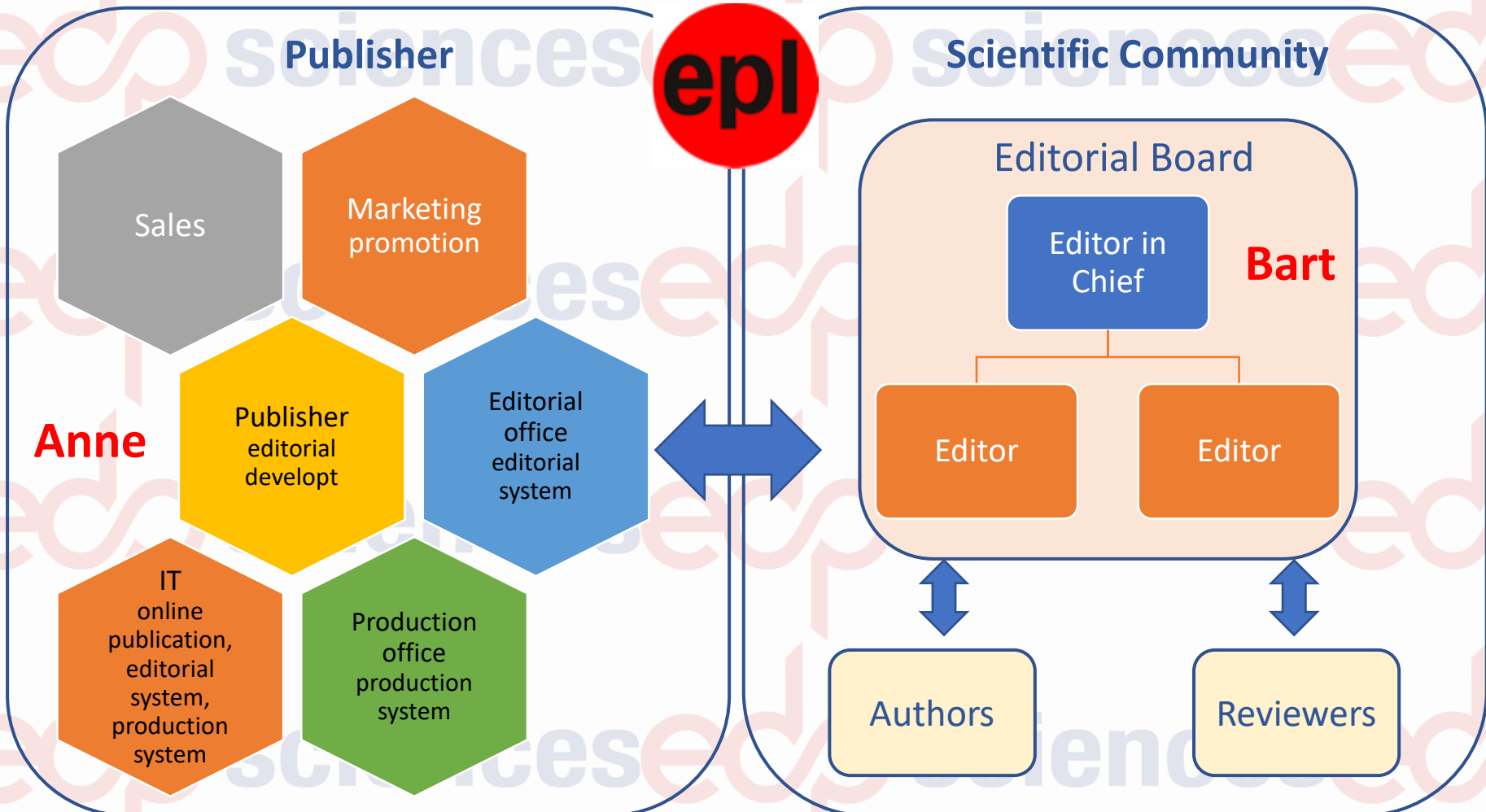
Until 2019, EDP Sciences was owned by **Société Française de Physique** and other French scientific societies.

Activities of EDP Sciences include:

- **Journals**
- **Conference proceedings**
- **Books**
- **Masterclasses**



How does a journal work? Example: EPL



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You have chosen your target journal,
now you can start writing your article!

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Author instructions



Pay attention to the **author instructions of the specific journal** particularly:

- Article types
- Size limits
- Preparation of figures
- Formatting



Standard structure for research articles



Meta-data

Title - Authors
Abstract - Keywords

Help readers find and read your paper

Body

I
M
R
a
D

Introduction

Explain the problem, state the objectives
=> **STATE THE RESEARCH QUESTION**

WHY?

Methods

Study design, data collection

HOW?

Results

What was discovered
=> **ANSWER THE RESEARCH QUESTION**

WHAT?

Discussion - Conclusion

Limitations of the article, implications SO WHAT?

Tail

Acknowledgments
Statements
References
Appendices

Recognize help, funding
Recognize previous work
Additional data



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Writing effective abstracts and titles



What makes a good title?



Why is it important to write a good title?

- A good title is a good advertisement for the article
- Search engines and indexing databases

How to write a good title?

- Clear and precise description of the content
- Papers with shorter titles tend to get more citations. Recommended length < 12 words
- Keep it simple. No abbreviations, jargon and symbols
- Can include action verb
- Avoid questions, humour
- Can be a two-part title separated by colon



Examples of titles



Two main types of titles (examples from EPL):

- **Declarative titles** – state the main findings or conclusions

“Heterogeneous investments induced by emotions promote cooperation in public goods games”

<https://doi.org/10.1209/0295-5075/ac4795>

- **Descriptive titles** – describe the subject of the article but do not reveal the main conclusions

“The influence of a cylindrical cathode on the electro-vortex flow of liquid metal: Numerical simulations and laboratory experiments”

<https://doi.org/10.1209/0295-5075/ac45be>

(This is also a two-part title, separated by colon)



Why is the abstract important?

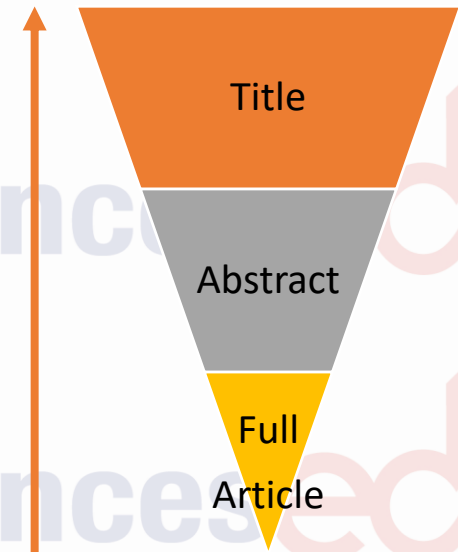


During peer review:

- Abstract predicts the quality of the paper
- Influences the decision of reviewers to review the paper
- Influences the time it takes to complete the review

After publication:

- Abstracts are freely available in abstracting/indexing databases
- Determines whether a reader downloads and reads the full paper



Visibility, importance



Abstract structure



The abstract should contain all these parts: **background, materials & methods, results, conclusion/perspectives** (cf. **IMRaD** structure)

Normally no headings or paragraph breaks in physics journals

To indicate where you are in the structure, use:

- **transition words** (In this study, here, we show...)
- **present/past tense** (what is known vs. what you did)
- **active/passive voice** (what you did vs. what others did)

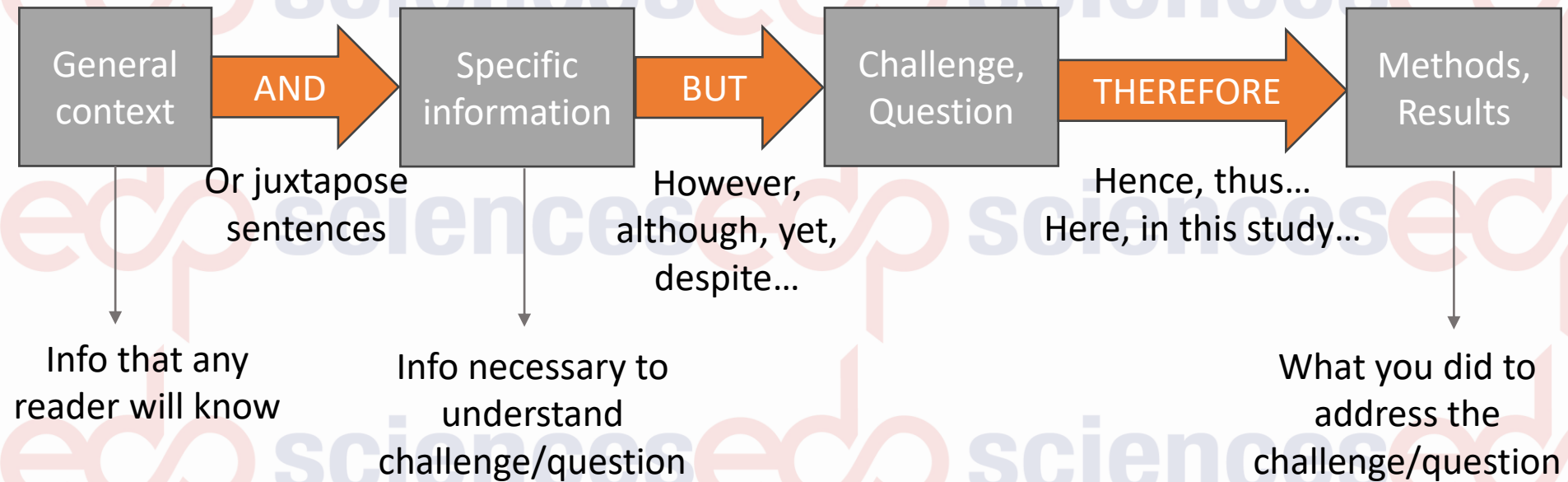


Abstract structure



The **background** section:

...AND...BUT...THEREFORE



How to write a good abstract ?



The abstract should cover ALL the parts of your paper (IMRaD) in equal proportions

Include terms that people are likely to use when looking for papers

Avoid references and abbreviations

Avoid vague sentences e.g. “the results are compared to the literature”

Don't break into paragraphs. Use transition words and tenses

Typically 100-200 words

Focus on ONE result
Include numerical result and statistical significance

Write the abstract last

Get it language edited by a native speaker



Example (111 words)



The role of syntax in the formation of scale-free language networks

The overall structure of a network is determined by its micro features, which are different in both syntactic and non-syntactic networks. However, the fact that most language networks are small-world and scale-free raises the question: does syntax play a role in forming the scale-free feature? To answer this question, we build syntactic networks and co-occurrence networks to compare the generation mechanisms of nodes, and to investigate whether syntactic and non-syntactic factors have distinct roles. The results show that frequency is the foundation of the scale-free feature, while syntax is beneficial to enhance this feature. This research introduces a microscopic approach, which may shed light on the scale-free feature of language networks.

<https://doi.org/10.1209/0295-5075/ac8bf2>

General

- ✓ Good size – a bit short
- ✓ Transition words
- ✓ All parts included
- ✗ A bit unbalanced

Background

- ✓ Present
- ✓ Gap in knowledge

Methods

- ✓ Active voice
- ✗ Could use past tense

Results

- ✗ No numerical result
- ✗ Could use past tense

Conclusion, Perspectives

- ✓ Present tense (conclusion)
- ✓ Conditional (perspectives)
- ✗ A bit vague

Confidentiality rule



The abstracts presented here are UNPUBLISHED

Respect the confidentiality of the peer review process and refrain from using information obtained during the peer review process for your own or another's advantage, or to disadvantage or discredit others

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Visual elements



Why include visual elements?



Effectively communicate large amounts of complex information

Visual elements include:

- Graphics
- Photos
- Diagrams
- Tables...

Visual elements can be used to represent:

- data
- logical steps
- important procedures

Visual elements can be used in these sections:

- Methods
- Results



How to design good figures?



When preparing your article:

- Number the illustrations according to their sequence in the text
- Check instructions to authors: embedded or submitted separately?
- Use a logical naming convention for the files
- Create figures/tables before writing the article

Good figures

- Include a **detailed caption**
- **Figures + caption should stand alone**
- Don't mislead with your data presentation (choice of scale, colour scheme)
- Minimize text included on the illustrations
- Don't put title on the illustrations



How to write a good caption?



Caption = **title** + **description**

Fig. 3: Comparison of the force vs. position (a) measured by the CLD $\eta_{\text{drop,fit}}(x_{\text{drop}})$ and (b) measured by DAFI. Volumes of $5 \mu\text{L}$ were used for both measurements. Both measurements were performed subsequently in two setups (fig. 1). The dynamics after depinning is given by the relaxation of the local contact line (approximately 20 ms) (a). The dynamics after depinning in the DAFI measurements (b) includes relaxation of the additional elongation of the drop due to pinning. After depinning from the defect, the relaxation of the entire contact line into a steady state is much slower (approximately 1 second).

Title

✓ What type of figure

Description

✓ Panel numbers

✓ Brief method

✓ Results

Can also include meaning of symbols, colours, references

<https://doi.org/10.1209/0295-5075/ac7acf>

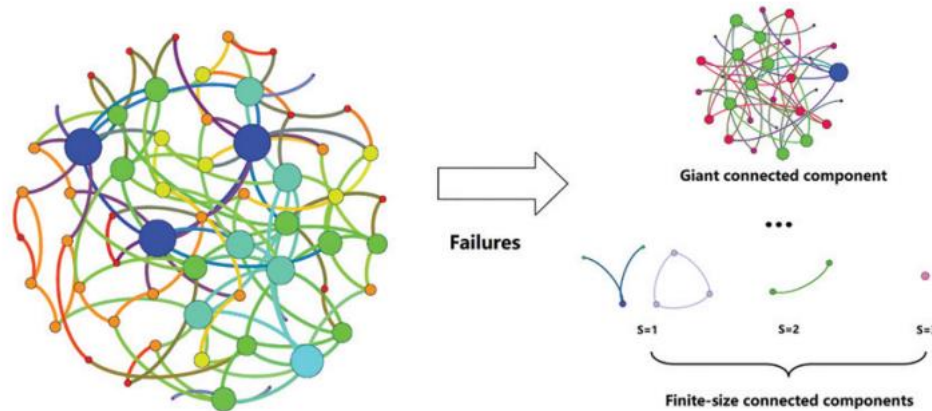
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Schematic diagram



Diagrams can be used for:

- **Methods** : protocol, flow chart, survey design, experimental design...
- **Results** : explain mechanisms...



Caption =
title + description

Fig. 1: Schematic diagram of the giant connected component and finite-size connected components with different size s after undergoing failures. When a network system suffers an attack or fails, the network connectivity is broken, and the original network is fragmented into connected components with different size.

Graphs

Graphs (plots) are used in **results**:

- Point charts, line charts
- Histograms...

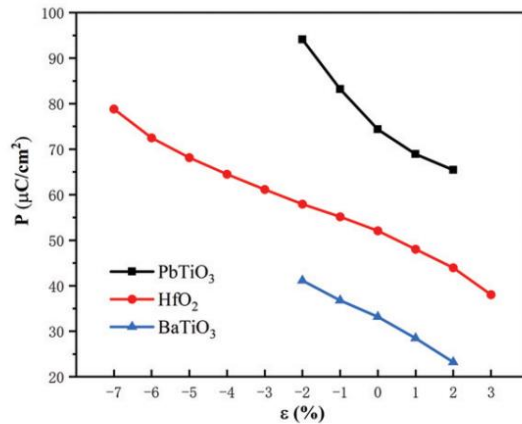


Fig. 4: The ferroelectric polarization (P) varies with homogeneous strain (ϵ) for PbTiO_3 (black line), HfO_2 (red line) and BaTiO_3 (blue line).

- ✓ Axes titles
- ✓ Units
- ✓ Label curves and data sets (colour, line type): in **caption** or on **figure**
- ✓ Redundant labels (esp. if using colour)

Can also include:

- ✓ Error bars, statistical info

<https://doi.org/10.1209/0295-5075/ac7540>

Graph or schematic diagram?

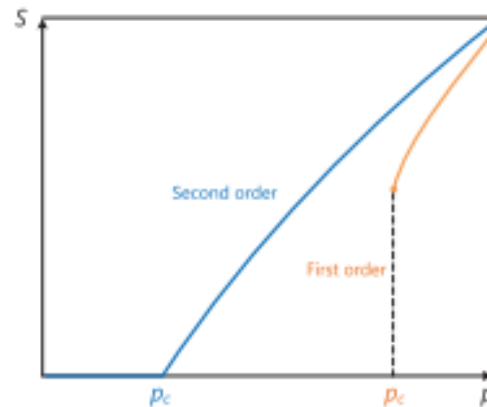
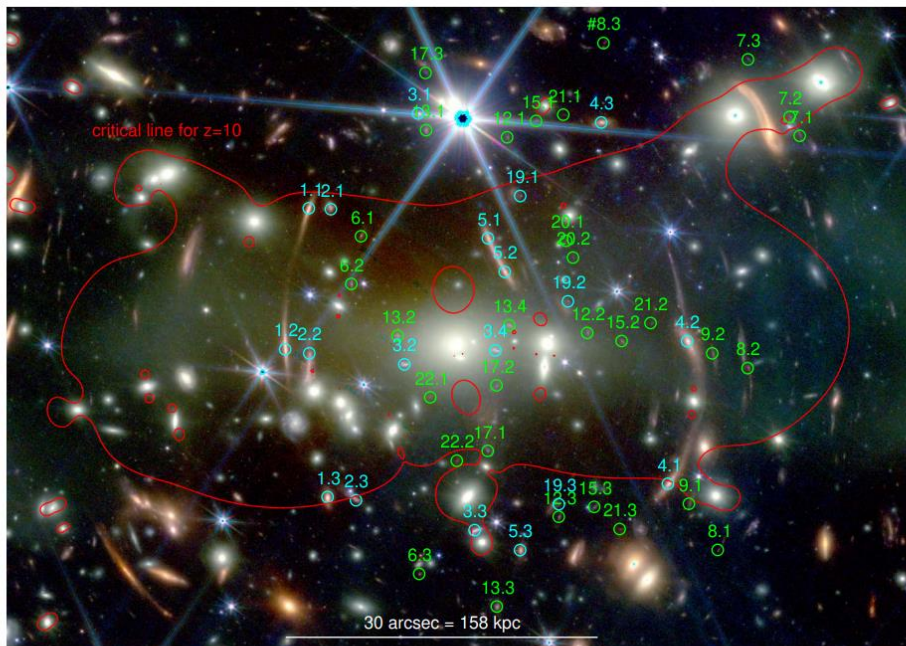


Fig. 3: Schematic diagram from ref. [53] of first-order and second-order phase transitions. The horizontal and vertical coordinates depict the attack strength and the size of the giant connected component, respectively. The first-order phase transition depicts that the size of the giant component suddenly collapses (jump) from a finite value to zero. The second-order phase transition describes that the size of the giant component continuously changes from a finite value to zero.

Illustrations, photos

Illustrations, photos are used in **results**:
Photography, microscope, telescope imaging...



- ✓ Scale bar
- ✓ Labels, arrows circles... to highlight important elements

Fig. 1. Galaxy cluster SMACS J0723. Colour composed image using JWST/NIRCam imaging with the filters $F090W$, $F150W$ in blue; $F200W$, $F277W$ in green; and $F356W$ and $F444W$ in red. Cyan circles show the positions of multiple images identified in the pre-JWST lensing model and the green circles are the newly identified multiple images with JWST. The red line is the critical line for a source at redshift $z = 10$.

<https://doi.org/10.1051/0004-6361/202244517>

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Questions?

