



# *The centre Mersenne for Diamond Open Access: a summary of five years of existence*

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Université Grenoble Alpes & CNRS (France)

Masterclass: Open Science and Scientific Publishing  
Formation du Collège Doctoral, UGA  
June 3, 2024

## *Plan of the talk*

- 1 The centre Mersenne
- 2 Staff & governance
- 3 Services
- 4 Business model
- 5 A focus on 2 examples
- 6 On-going projects & perspectives

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## The centre Mersenne

The centre Mersenne is a public comprehensive **Diamond Open Access (free to read, no APC (= charge to publish))** publishing infrastructure for scientific publications.

It provides editorial teams with

- a **publishing platform** for hosting and dissemination of open access research publications;
- a range of **editorial and technical tools and services** to help to manage the journal workflow (peer-review process, publication...).

The centre Mersenne is developed by **Mathdoc**, a French Support and Research unit of **CNRS Mathématiques** and **Université Grenoble Alpes**.



The centre Mersenne has been launched in 2018 with 10 mathematics journals.



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## *The centre Mersenne*

### What kind of publications?

- Research journals and proceedings;
  - newly created or already existing; **flipping journals** are welcome
  - of all scientific disciplines in the fields of STEM (science, technology, engineering and mathematics), with an initial kernel in maths;
  - compliant with **best editorial practices**;
  - formatted with  $\text{\LaTeX}$  ideally;
  - published in **Diamond Open Access** (no charge to read, no charge to publish).
- The articles are distributed with a Creative Commons CC-BY licence.

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## *Why creating centre Mersenne ? (in three slides)*

### *Evolution of public expenditures for scientific publication in France*

- **Cost of APC** for French institutions in 2020: 30,1M€. This cost has been multiplied by 3 between 2013 and 2020.
- **Cost of subscriptions**: 87,5M€ in 2020. Has been continuously increasing since 20 years (in average + 1,76 % since 2014).
- 25% of published articles by a French author has been paid by APC in 2020.
- The sum of two bills (APC + subscriptions) is increasing.

*Source : Étude "Retrospective and prospective study of the evolution of APC costs and electronic subscriptions for French institutions" (2022)*

## *Why creating centre Mersenne ? (in three slides)*

### *Prospective reflections on public expenditures devoted to scientific publishing in France*

- If **the current trend continues**
  - Total cost of APC : 50,6 M€ in 2030
  - Total cost of subscriptions: 97,5M€ in 2030.
- If **open access with APC speeds up**  
Total cost of APC: 68,7 M€ in 2030
- **Theoretical asymptotics**: 90% of articles published with APC, and 10% in diamond OA: 168,7 M€ in 2030.

*Source : Étude "Retrospective and prospective study of the evolution of APC costs and electronic subscriptions for French institutions" (2022)*

# *Why creating centre Mersenne ? (in three slides)*

## *A very brief (and incomplete) history of open access*

- **2001** *Budapest Open Access Initiative*: principle statement for open access, recommendation for institutional self-archiving.
- **2012** *The Cost of Knowledge*: Elsevier boycott
- **2016** *Loi pour une République Numérique*: allows self-archiving of accepted papers on HAL or ArXiv after at most 6 months (for sciences and techniques)
- **2018**
  - End of the national agreement with Springer.
  - Launching of centre Mersenne.
  - First *Plan national pour la science ouverte*/
- **2021** *Second Plan national pour la science ouverte*. Official support of the diamond model.
- **2022** *"Le CNRS demande instamment à ses chercheurs et à ses chercheuses de ne surtout pas payer pour publier un article"*

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## Centre Mersenne trajectory

- 2018 10 journals, 210 articles published (7 000 pages). *Mathematics*.
- 2019 13 journals, 270 articles published (9 000 pages).  
+ *Geomechanics*
- 2020 21 journals, 600 articles published (12 700 pages)  
+ *Chemistry, Physics, Biology, Earth Sciences* (= *Comptes Rendus de l'Académie des sciences*)
- 2021 22 journals, 884 articles published (17 834 pages) + *several scientific disciplines* (= *Peer Community Journal*)
- 2022 23 journals, 872 articles published (18 804 pages)
- 2024 24 journals, + *Maths/Computer Sciences*.

## *Thematic distribution*

- *Maths* (16 journals + 1 book + 6 seminars)
- *AI* (1)
- *Physics* (1), *Mechanics* (1), *Geomechanics* (1), *Biology* (1), *Chemistry* (1), *Earth Sciences* (1)
- *Multi-disciplinary journal in Sciences and Techniques* (1).

# The dissemination platform

centre-mersenne.org/en/

Numdam Mathdoc



ABOUT

OUR JOURNALS

OUR SERVICES

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## THE CENTRE MERSENNE ►

# An open access publishing platform for scientific publications.

The centre Mersenne is a diamond open access scientific publishing infrastructure developed by [Mathdoc](#), a support and research unit of [CNRS](#) and [Université Grenoble Alpes](#). The centre Mersenne provides all the publishing tools and services that enable editorial teams to manage, produce and distribute their publications.

The journals, books, proceedings or seminars are from all scientific disciplines, composed in LaTeX and distributed in open access.





# One website: les Annales de l'institut Fourier



**ANNALES DE L'INSTITUT FOURIER**

ABOUT THE JOURNAL EDITORIAL BOARD SUBMIT A PAPER SUBSCRIPTION

Articles to appear Browse issues Search articles, authors... All + Search

NOT Author -

All  
Author  
Title  
Date  
References  
Full text

**New article**

**Commutability of groups of trees**  
Carfite, Mathieu

**Group orderings, dynamics, and rigidity**  
Marr, Kalfeyn ; Pivas, Cristóbal

**Diffraction of elastic waves by edges**  
Katsnelson, Vitaly

**Invariants de Hodge pour  $S$ -ordinaires** [Simu  
S-ordinary Hodge invariants]  
Hernandez, Valentin

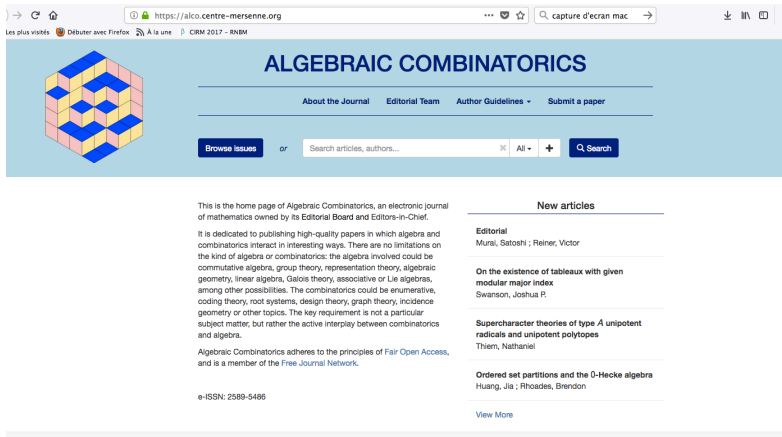
[View More](#)

Web publisher:  Kluwer

Supported by:  INSTITUT FOURIER

Developed by:  Mathdoc

# Another website: Algebraic Combinatorics



The screenshot shows the homepage of the Algebraic Combinatorics journal website. The browser address bar displays the URL `https://alco.centre-mersenne.org`. The page features a large blue header with the journal title "ALGEBRAIC COMBINATORICS" in white. To the left of the title is a 3D geometric logo composed of blue, yellow, and pink cubes. Below the title, there are navigation links: "About the Journal", "Editorial Team", "Author Guidelines", and "Submit a paper". A search bar is located below these links, with a "Browse issues" button on the left and a "Search" button on the right. The main content area is divided into two columns. The left column contains a paragraph about the journal's focus on algebra and combinatorics, followed by a paragraph about its adherence to Fair Open Access principles and its membership in the Free Journal Network. The right column is titled "New articles" and lists three recent publications with their authors. At the bottom right of the main content area, there is a "View More" link.

https://alco.centre-mersenne.org

Les plus visités Débuter avec Firefox À la une CRM 2017 - RNBM

## ALGEBRAIC COMBINATORICS

[About the Journal](#) [Editorial Team](#) [Author Guidelines](#) [Submit a paper](#)

[Browse issues](#) or  [All](#) [+](#) [Search](#)

This is the home page of Algebraic Combinatorics, an electronic journal of mathematics owned by its Editorial Board and Editors-in-Chief.

It is dedicated to publishing high-quality papers in which algebra and combinatorics interact in interesting ways. There are no limitations on the kind of algebra or combinatorics: the algebra involved could be commutative algebra, group theory, representation theory, algebraic geometry, linear algebra, Galois theory, associative or Lie algebras, among other possibilities. The combinatorics could be enumerative, coding theory, root systems, design theory, graph theory, incidence geometry or other topics. The key requirement is not a particular subject matter, but rather the active interplay between combinatorics and algebra.

Algebraic Combinatorics adheres to the principles of [Fair Open Access](#), and is a member of the [Free Journal Network](#).

e-ISSN: 2589-5486

### New articles

**Editorial**  
Murai, Satoshi ; Reiner, Victor

**On the existence of tableaux with given modular major index**  
Swanson, Joshua P.

**Supercharacter theories of type  $A$  unipotent radicals and unipotent polytopes**  
Thiem, Nathaniel

**Ordered set partitions and the  $\mathbb{O}$ -Hecke algebra**  
Huang, Jia ; Rhoades, Brendon

[View More](#)

## *Related platforms of publication*

- **Episciences** (épiMaths for mathematics), developed by the french unit CCSD (CNRS & french universities), an **overlay journal platform** based on the open institutional repository HAL;
- **SciPost** (mainly Physics);
- **OpenEdition** for social sciences and humanities, developed by CNRS & french institutions
- **SciELO**, **Redalyc-AmeliCA** (platforms for journals (mainly) based in South America, all scientific disciplines), **eLibM** (supported by German institutions),  
...

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## *The staff*

The team is composed of Mathdoc staff  $\simeq 14$  people  $\simeq 9$  FTE dedicated to the centre Mersenne:

- 1 coordinator
- 1 editor
- 1 managing editor
- 2 typesetter  $\text{\LaTeX}$ /XML,
- 6 IT developers,
- + administrative support,
- scientifically led by 2 mathematicians.

10 members hold a permanent position.

(+ 2 freelances for part of the typesetting activity).

## Governance

- The **scientific council**
  - evaluates candidate journals;
  - advises on orientations and priorities;
  - comprises 8 to 12 scientists (mainly mathematicians) assisted by a pool of experts.
- The **steering committee**
  - takes advice from the scientific council;
  - decides on priorities and allocates resources;
  - comprises Mathdoc directors and representatives of Mersenne's supporting institutions.

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## Editorial services

The essential editorial services systematically provided:

- Online publication and dissemination of articles on the centre Mersenne platform:
  - creation of a specific and customised website for each publication
  - attribution of DOI (Digital Object Identifier) with Crossref
  - crosslinking with reference databases, interoperability, an OAI-PMH server...
  - long term preservation through CLOCKSS
  - plagiarism detection
  - Statistics "counter", cited-by tool
- Creation of a customised L<sup>A</sup>T<sub>E</sub>X template
- Installation and maintenance of Open Journal System (OJS):
  - customisation of a dedicated instance adapted to the editorial board's evaluation process;
  - maintenance and support;
  - documentation and training.

## *Optional services*

- $\text{\LaTeX}$  typesetting and layout editing;
- copyediting, proofreading
- managing editor, journal workflow assistance;
- printing (on demand or a posteriori);
- ...

# Browsing

Browsing a journal website and accessing articles...

The sequence of screenshots illustrates the browsing process on the Algebraic Combinatorics journal website:

- Table of Contents:** The first screenshot shows the journal's homepage with a navigation bar and a 'Table of Contents' section. The table lists several articles, including 'A new approach to the study of the combinatorics of the symmetric group' by Barina, Barina, and Barina, dated 2019-01-01.
- Article Page:** The second screenshot shows the full article page for the selected article. It includes the article title, authors, and a detailed abstract. The abstract discusses the combinatorics of the symmetric group and the role of the symmetric group in the study of the combinatorics of the symmetric group.
- Article Page (Continued):** The third screenshot shows the continuation of the article page, including the full text of the article and the journal's logo.

# Searching

Searching articles in a journal website. . .



The screenshot shows the homepage of the Annales de l'Institut Fourier journal website. The header features the journal's logo, name, and navigation links. A search bar is prominently displayed with a dropdown menu for search criteria. Below the search bar, a list of articles is shown, including titles and authors.

**ANNALES DE L'INSTITUT FOURIER**

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Articles to appear Browse issues Search articles, authors... All + Search

☐ NOT ☐ Author

The Annales de l'Institut Fourier aim at publishing original papers of a high level in all fields of mathematics, either in English or in French.

The electronic edition is fully open access and free of author charges.

**New article**

**Commutability of groups of trees**  
Girelle, Mathieu

**Group orderings, dynamics, and rigidity**  
Marin, Kathryn ; Pivas, Cristóbal

**Diffraction of elastic waves by edges**  
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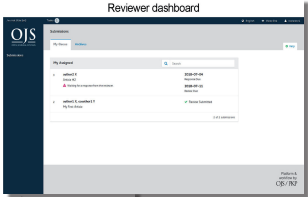
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Hernandez, Valentin

[View More](#)

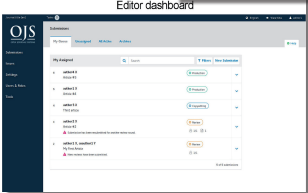
Web publisher:  Supported by:  Developed by: 

## Managing submissions. . .

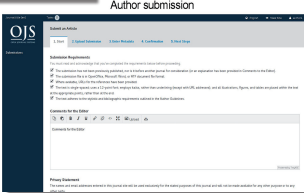
Reviewer dashboard



Editor dashboard



Author submission





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## Average production cost of an article at centre Mersenne (2020 - 2021)

Production cost per article or page (estimate)

- **Production cost per article:** 810 € (all journals) / 780 € (when not including *Comptes Rendus*) / 140 € for *Peer Community Journal*
- **Production cost per page:** 41 € (all journals) / 28,5 € (when not including *Comptes Rendus*)

This does not take into account: volunteer work of researchers, editorial management, .....

## *Business model - general ideas*

- Our model is **Diamond OA**: No fees for the authors, no fees for the readers.
- Our business model must be **scalable and sustainable** to welcome 1 to 3 new journals per year.
- So we need to **recover at least running costs** from the journal or from the organisations that support it.
- But our costs have to remain **very low, when not zero**, especially for the journals that have few financial means.

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## *Business model - structure of costs*

- **General running of the infrastructure and essential publication services**
  - Almost completely supported by CNRS and Univ. Grenoble (staff, costs)
  - + a modest journal annual subscription (**not applicable for journals supported by CNRS**)
  - + funding from institutions, foundations, libraries;
- **Recurrent costs associated to optional services, proportional to the volume published:** covered by invoicing the journal or its supporting institution(s) at cost price or by specific institutional supports. (**not applicable for journals supported by CNRS**)

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## A journal flipping: *Algebraic Combinatorics*

- **History and setting:** in 2018, almost all the editors of the *Journal of Algebraic Combinatorics* published by Springer **resign** from that journal.

They create and become editor of a new journal published by centre Mersenne, under the new name: *Algebraic Combinatorics*. Springer retains the property of the title *Journal of Algebraic Combinatorics*.

- **Volume:** 700 pages in 2018, more than 1300 pages in 2019, 2020, 1100 pages in 2021, 1400 in 2022
- **Legal publishers:** association MathOA until 2021, The Combinatorics Consortium since 2022.
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## Another journal flipping: *Les Comptes Rendus de l'Académie des sciences*

- *Les Comptes Rendus de l'Académie des sciences* is the journal of the French Academy of sciences created in 1835 by the physicist François Arago. It is divided in seven titles: *Mathematics, Physics, Biology, Mechanics, Chemistry, Earth Sciences, Paleontology*.
- 1997-2019: Published by Elsevier.
- In 2020, under the initiative of Etienne Ghys, *Les Comptes Rendus de l'Académie des sciences* becomes a Diamond journal published by the centre Mersenne.
- **Volume:** around 5000 pages per year.
- **Legal publisher & owner of the title:** Académie des sciences
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## *A common challenge for Académie des sciences and centre Mersenne*

- Doubling the publication volume of the centre Mersenne.
- New disciplines  $\rightsquigarrow$  new purposes, new formats ( $\text{\LaTeX}$  or word with HTML), indexation to new databases, new templates.
- New metadata: Orcid identifiers, Equal Contrib...
- For the centre Mersenne, need to scale-up our administrative and financial procedures (public markets for suppliers, diffusion agreements with journals, official pricing).
- For the Académie des sciences, need to find a recurrent funding for the production costs.
- This transition has revitalized the journal and led to new projects: semi-automatic translation, on-line comments (on-going)

# The website of Comptes Rendus - Géoscience

Mathématique Mécanique Physique **Géoscience** Palevol Chimie Biologies



ACADÉMIE  
DES SCIENCES  
INSTITUT DE FRANCE

## Comptes Rendus Géoscience *Sciences de la Planète*

À propos - Organisation Collections Soumettre un article -



Feuilleter

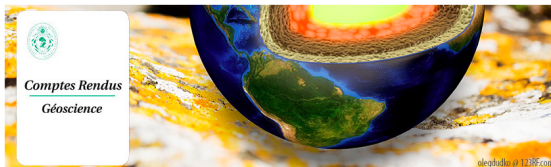
ou

Rechercher des articles, des auteurs...



Tout +

Rechercher



]

## Journal layout: Physics



INSTITUT DE FRANCE  
Académie des sciences

# Comptes Rendus Physique

Yusef Nir and Vincenzo Vagnoni

CP violation in B decays

Volume 21, Issue 1 (2020), p. 61–74

<https://doi.org/10.5802/crphys.11>

Part of the Thematic Issue: A perspective of High Energy Physics from precision measurements

Guest editors: Stéphane Morel (Clermont Université, CNRS/IN2P3, Clermont-Ferrand) and Mario-Hélène Schme (Université Paris-Saclay, CNRS/IN2P3, Orsay)

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Centre Mersenne pour l'édition scientifique ouverte  
[www.centre-mersenne.org](http://www.centre-mersenne.org)

Yusef Nir and Vincenzo Vagnoni

65

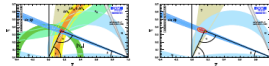


Figure 1. The constraints in the  $(\beta, \eta)$  plane from (left) all relevant processes, and (right) from CP-violating asymmetries in B decays only [31].

## 4. The CKM mechanism and CP violation in beauty

The three-generation SM violates CP. Among the parameters of the SM Lagrangian, there is a single phase (or, equivalently, a single imaginary parameter), which appears in  $V$ , the CKM matrix that parametrises the  $W^\pm$  interactions with  $\bar{u}_i d_j$  pairs (where  $u_{1,2,3} = u, c, t$ , and  $d_{1,2,3} = d, s, b$ )

$$\mathcal{L}_{W,q} = -\frac{g}{\sqrt{2}} \bar{u}_i V_{ij} V_j^\dagger d_j + \text{h.c.} \quad (12)$$

The CKM matrix depends on three real and one imaginary parameters. The Wolfenstein parametrisation is particularly useful

$$V = \begin{pmatrix} 1 - \frac{1}{2}A^2 & A & A\lambda^3(p - iq) \\ -\frac{1}{2}A^2 & 1 - \frac{1}{2}A^2 & A\lambda^2 \\ A\lambda^3(1 - p - iq) & -A\lambda^2 & 1 \end{pmatrix}. \quad (13)$$

The fact that all quark flavour-violating processes and all CP-violating processes depend on only three real ( $\lambda, A, \rho$ ) and one imaginary ( $\eta$ ) parameters makes the CKM mechanism of flavour and CP violation subject to stringent tests. Here, CP-violating processes play a special role. The fact that CP is a good symmetry of the strong interactions implies that CP asymmetries dominated by interference of decays with and without mixing are subject to a uniquely clean theoretical interpretation. Thus, for example, within the SM

$$\mathcal{A}(\lambda_q \epsilon_q) = \frac{2\eta(1 - \rho)}{\eta^2 + (1 - \rho)^2}, \quad (14)$$

with hadronic uncertainties entering only at the level of a few per cent corrections.

In the literature, one often defines  $\beta + \eta = -(V_{ub}V_{cb}^*)/(V_{ud}V_{cd}^*)$  which is valid to all orders in  $\lambda$ . The parameters  $\rho$  and  $\eta$  approximate  $\beta$  and  $\eta$  to order  $\lambda^2$ . The various constraints in the  $(\beta, \eta)$  plane are presented in Figure 1. CP asymmetries in B decays are playing a major role,  $\mathcal{A}(\epsilon_{\text{CP}})$  and the CP asymmetry in  $B \rightarrow DK$  decays constrain with impressive accuracy the angles

$$\alpha = \arg\left(-\frac{V_{td}V_{ub}^*}{V_{ud}V_{tb}^*}\right), \quad \beta = \arg\left(-\frac{V_{td}V_{cb}^*}{V_{ud}V_{db}^*}\right), \quad \gamma = \arg\left(-\frac{V_{ub}V_{cb}^*}{V_{ub}V_{db}^*}\right), \quad (15)$$

respectively. As there is a region in the  $(\beta, \eta)$  plane that is consistent with all measurements, the CKM mechanism of flavour violation and the CKM mechanism of CP violation provide a consistent explanation of all data.

## 5. Probing new physics with CP violation in B decays

The consistency of the measured CP violation in B decays with the SM predictions leads to strong constraints on new physics. In the previous section, we assumed that the various flavour-violating and CP-violating observables are accounted for by the CKM matrix, and tested the

## Journal layout: Chemistry



INSTITUT DE FRANCE  
Académie des sciences

# Comptes Rendus Chimie

J. Brahm, S. Nasri, H. Saidi, K. Aouadi, R. Sanderson, M. Winter, D. Cruickshank, S. Najmudin and H. Nasri

Optical and photoelectronic properties of a new material:  
Optoelectronic application

Volume 23, Issue 6-7 (2020), p. 403-414.

<https://doi.org/10.5802/crm.20>

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Table 3. Electrical parameters of the (TbO/PS/Al) system

Complex	$I_0$ (A)	$\Phi_b$ (V)
$[\text{Zn}(\text{TMPP})(4,4'-\text{bipy})-2](4,4'-\text{bipy})-2\text{H}_2\text{O}$	$6.027 \times 10^{-8}$	1.2353

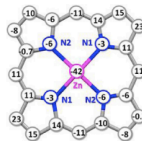


Figure 4. Schematic representation of the porphyrin macrocycle of the  $[\text{Zn}(\text{TMPP})(4,4'-\text{bipy})]$  complex showing the displacements of each atom from the 24-atom mean plane in units of 0.01 Å.

$[\text{Zn}(\text{TMPP})(\text{HMTA})]$ , we note that our complex (I) has a high barrier height  $\Phi_b$  compared to the related zinc-IMETA derivative. This is most probably due to the aromatic ligand 4,4'-bipy for (I), which can prevent the distribution of the charge contrary to the case of the related species containing the non-aromatic ligand HMTA.

It is the same for the saturation current  $6.027 \times 10^{-8}$  for our zinc(II)-4,4'-bipy derivative, which is very low compared to that of the related  $[\text{Zn}(\text{TMPP})(\text{HMTA})]$  complex whose value is equal to  $6.57 \times 10^{-5}$ . These results show that the nature of the axial ligand plays a very important role in the optoelectronic properties for this type of porphyrin compound.

The variation of  $I$  as a function of  $V$  has been represented in a log-log plot to better study the mechanism of electrical conduction across the junction (Figure 6).

For complex (I), as shown by this figure, there are different regions where the current varies as a function of the potential according to the relation  $I = V^m$ , where  $m$  represents the slope for each region and provides information about the type of conduction mechanism.

The slope value is close to unity at low voltage defining the ohmic region. In this region, the presence of a small amount of interface barrier hinders charge injection. In this case, the density of thermally excited load carriers is insufficient and trap levels are empty [32]. The current density is given by (2):

$$J_0 = q \cdot p_0 \cdot \mu \cdot \frac{V}{d} \quad (2)$$

Here  $q$  is the electronic charge,  $\mu$  is the charge mobility,  $p_0$  is the free carrier density,  $d$  is the film thickness and  $V$  is the applied voltage.

The slope value is approximately 1.6 at medium voltage in the case of our zinc porphyrin complex, where the voltage follows the power law dependence ( $I-V$ ), which is related to the space-charge limited current mechanism (SCLC). Moreover, the density of the injected charges from electrodes increases. Since the applied voltage passes through the transition voltage  $V = 0.53$  V, the density of the injected charges will dominate the transport capacity of the  $[\text{Zn}(\text{TMPP})(4,4'-\text{bipy})-2](4,4'-\text{bipy})-2\text{H}_2\text{O}$  complex. In this regime, the current density varies following equation (3):

$$J_{\text{SCLC}} = \frac{9}{8} \epsilon_0 \mu_0 \frac{V^2}{d^2} \quad (3)$$

Here  $\epsilon_0$  is the material permittivity (assumed to be  $4\epsilon_0$ , where  $\epsilon_0$  is the vacuum permittivity) and  $\mu_0$  is the effective carrier mobility equal to  $q\mu$ , which is the free charge fraction with  $\theta = p/(p + p_0)$ . Parameters  $p$  and  $p_0$  represent the free and trapped charge carrier densities, respectively,  $d$  is the film thickness and  $V$  is the applied voltage.

According to the SCLC model (3),  $\mu_0$  for the film containing complex (I) was calculated with a value of  $0.45 (10^{-3} \text{ cm}^2/\text{Vs})$ . This result is comparable to the literature value of about  $10^{-3} \text{ cm}^2/\text{Vs}$  for the 2,7-disubstituted benzene  $p$ -type species [33–35].

## *Plan of the talk*

- 1 The centre Mersenne
- 2 Staff & governance
- 3 Services
- 4 Business model
- 5 A focus on 2 examples
- 6 On-going projects & perspectives**



## Centre Mersenne: On-going projects

- **Full-text for maths articles:**  $\text{\LaTeX}$   $\rightarrow$  HTML online. Should be available by the end of 2024.
- **Semi-automatic translation of articles:** an online interface enabling scientists or professional translators to translate automatically and post-edit articles of the *Compte Rendus de l'Académie des sciences*. Available already for chemistry, biology, earth sciences, see next slide. Will be extended to maths, mechanics, physics as soon as articles in HTML format available.
- **Comments online:** platform enabling authenticated scientists to post comments on articles for the *Comptes Rendus de l'Académie des sciences*.

## *Semi-automatic translation: focus on the project*

Project sponsored by the French Ministry of Higher Education and Research and the French Ministry of Culture. Two-fold objective:

- Establishing a **bilingual scientific corpus** that could be utilized as a dataset to train an AI;
- Developing a **comprehensive computer-assisted translation software** set up on the publication website of the *Comptes Rendus de l'Académie des sciences*.

## Features

- Principle: machine translation via DeepL possible, and systematically followed by human voluntary or professional post-editing of articles.
- Pivot format: HTML.
- Publication of the translation in PDF (via an intermediate  $\text{\LaTeX}$  format) and HTML with a CC-BY licence next to the original work.

**Means:** 1 professional translator and 1 IT developer during 12 months, 1 freelance translator, + Mersenne staff

**Outcome after 12 months:** 25 articles translated and the interface being tested on a test site.

**Main difficulty overcome:** math formulas are usually not handled by computer-assisted translation softwares.

## Figure: Authentication, automatic translation then human post-editing

### Start a new translation

Article DOI

10.5802/crmes.133

The DOI is visible in the metadata section of the article.

Target language

French

☒ I agree to make my translation public and that it may be reused by other users.

Start

☐ Translating the text...

#### 1. Introduction

Mayotte Island is one of the four islands of the Comoros volcanic archipelago. It is located in the Indian Ocean in the Musandiq Channel between Madagascar and Africa. Mayotte Island shows marked volcanic geomorphology. Volcanism in Mayotte started about 18 to 15 Mya ago (Ludwig et al. 2020). The volcano continued erupting in Quaternary, with the last volcanic eruption occurring 7000 years ago (Zobele et al. 2021). The source of volcanic activity in Mayotte is still debated. Enawick and Ducous (1982) suggest that the origin of the archipelago is a hotspot, while Vignier et al. (1988) proposed that the volcanism corresponds to the reactivation of old and deep lithospheric fractures. Michon (2001) also rejects the idea of a hotspot and proposes that the Comoros archipelago volcanic activity can be explained by lithospheric deformation related to the southern extension of the East-African rift.

In general, the archipelago of Comoros is considered a moderately seismic region. However, since May 18, 2020, unusual seismicity has been observed in the east of Mayotte Island. From May 18, 2018 to July 31, 2019 about 2000 events with local magnitude  $M_{\text{L}}$  3.5, were recorded (REVUSOMA-VPZ 2021). The largest earthquake occurred on May 15, 2019, with a magnitude of  $M_{\text{L}}$  = 5.5. After July 2019, the number of earthquakes decreased, showing less than a hundred earthquakes with magnitude  $M_{\text{L}}$  3.5 per month (REVUSOMA-VPZ 2021). Sautel et al. (2021). Although the most significant earthquakes occurred at the beginning of the crisis, the seismic intensity active in 2021 with 141  $M_{\text{L}}$  2.5 Volcano-Tectonic (VT) earthquakes located in December 2021 (REVUSOMA-VPZ 2021). Geodetic data recorded in Mayotte show transient displacements of approximately 15–20 cm in the east and subsidence of 8 to 15 cm

## Figure: Compilation, cover sheet and publication

### Les traductions des Comptes Rendus Géoscience

Sciences de la Planète

Exploration du lien entre les grands séismes et le transport magnétique au début de la crise volcanico-sismique de Mayotte.

Site de la revue Comptes Rendus

**Abstract** L'origine du lien entre les grands séismes et le transport magnétique au début de la crise volcanico-sismique de Mayotte est encore débattue. Les données géologiques et géophysiques suggèrent que l'origine de l'archipel est un hotspot, tandis que d'autres études suggèrent qu'il s'agit d'une reactivation de fractures lithosphériques profondes. Cette étude explore le lien entre les grands séismes et le transport magnétique au début de la crise volcanico-sismique de Mayotte. Les données géologiques et géophysiques suggèrent que l'origine de l'archipel est un hotspot, tandis que d'autres études suggèrent qu'il s'agit d'une reactivation de fractures lithosphériques profondes. Cette étude explore le lien entre les grands séismes et le transport magnétique au début de la crise volcanico-sismique de Mayotte. Les données géologiques et géophysiques suggèrent que l'origine de l'archipel est un hotspot, tandis que d'autres études suggèrent qu'il s'agit d'une reactivation de fractures lithosphériques profondes. Cette étude explore le lien entre les grands séismes et le transport magnétique au début de la crise volcanico-sismique de Mayotte.

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## *Conclusion: Main challenges for the centre Mersenne*

- Face the **increasing volume of publication** since 2018.
- **Adapt to new editorial practices** because new scientific disciplines involved  $\rightsquigarrow$  specific adaptations on OJS and on the platform.
- **Adapt our platform to new formats** (not all the journals in  $\text{\LaTeX}$ ).
- Develop **efficient and ethical services** (semi-automatic translation, full-text...). Improve quality, and avoid relying on bibliometric indicators.
- Achieve the administrative and financial procedures and contracts taking into account the public administration constraints.
- Hire and form people, minimize the outsourcing for typesetting.
- **Convince the community that the centre Mersenne is a nice, reliable and long-term publishing solution to create or to flip journals in open access.**

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Thanks!



## *Why Mersenne?*

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A quotation (Baillet, 1691)

*“Mersenne s'estoit rendu comme le centre de tous les gens de lettres par le commerce continuel qu'il entretenoit avec tous, et tous avec luy. C'estoit a luy qu'ils envoyoient leurs doutes et leurs difficultez pour estre proposees par son moyen a ceux dont on attend les solutions ; et lorsqu'il les avoit reçues, il les leur renvoyoit faisant a peu pres dans le corps de toute la republique des Lettres la fonction que fait le coeur dans le corps humain a l'egard du sang. [...] Les Italiens le regardoient aussi bien que nous comme le grand negociant des Lettres, qui fournissoit les provisions aux autres, et qui scavoit exiger d'eux ce qu'ils estoient capables de produire.”*

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*“Mersenne was like the center of all scholars by the continual commerce he maintained with all, and all with him. It was to him that they sent their doubts and their difficulties to be proposed by his means to those whose solutions were awaited; and when he had received them, he sent them back to them, having almost in the body of the whole Republic of Letters the function which the heart makes in the human body with regard to blood. The Italians regarded him, as we do, as the great mediator of the Letters, who furnished provisions to others, and was able to demand of them what they were capable of producing.”*

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A portrait



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