



The centre Mersenne for Diamond Open Access

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ECM, Sevilla
2024



Plan of the talk

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

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The centre Mersenne

The centre Mersenne is a public comprehensive **Diamond Open Access** 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 has been launched in 2018 with 10 mathematics journals.

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Supporting institutions

The centre Mersenne is developed by **Mathdoc**, a Support and Research unit of **Centre National de la Recherche Scientifique** and **Grenoble University**.



Mathdoc's mission is to develop services towards the math community:

- maker of **Numdam** (French digital maths library);
- maker of Cedram 1995-2018 (publishing platform for french mathematics journals, extended to the centre Mersenne)
- partner of **EuDML** (European digital mathematics library).
- maker of **Geodesic** (Mathdoc digital mathematics library).

The centre Mersenne

What kind of publications?

- Research journals and proceedings;
- newly created or already existing (**conversion**);
- of all scientific disciplines in the fields of STEM (science, technology, engineering and mathematics), with a strong kernel in maths (around 2/3);
- compliant with **best editorial practices**;
- formatted with \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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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*.
- 2021 22 journals, 884 articles published (17 834 pages) + *PCI's disciplines*
- 2022 23 journals, 872 articles published (18 804 pages)
- 2024 24 journals, + *Computer Sciences*.

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The staff

The team is composed of Mathdoc staff: currently 14 people \simeq 8 FTE dedicated to the centre Mersenne:

- 1 coordinator
- 1 editor
- 1 managing editor
- 2 typesetters \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, but not only!) 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^AT_EX 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

- \LaTeX typesetting and layout editing;
- copyediting, proofreading
- managing editor, journal workflow assistance;
- printing;
- ...

Some journals websites

OPEN GEOMECHANICS

Articles include:

- 1. The effect of the... on the... (with image of a geological structure)
- 2. The effect of the... on the... (with image of a geological structure)
- 3. The effect of the... on the... (with image of a geological structure)
- 4. The effect of the... on the... (with image of a geological structure)
- 5. The effect of the... on the... (with image of a geological structure)
- 6. The effect of the... on the... (with image of a geological structure)
- 7. The effect of the... on the... (with image of a geological structure)
- 8. The effect of the... on the... (with image of a geological structure)
- 9. The effect of the... on the... (with image of a geological structure)
- 10. The effect of the... on the... (with image of a geological structure)

Plan

- Titre
- Résumé
- Mot-clés
- Texte intégral
- 1. Introduction
- 2. Matériau
- 3. Méthode
- 4. Comparaison des résultats
- 5. Résultats
- 6. Conclusion
- Conférence
- Acknowledgements
- Bibliographie
- Cite par
- Commentaires
- Publier un commentaire

$$\mu_m = \sum_{i=1}^n f_i (m^i)^{\alpha_i} \quad (1)$$

$\alpha_i = \beta^i / \sum_{j=1}^n \beta^j m^j$, with β representing the total number of generated models set used as important, instead, it is used for indexing location, and we keep this reference PDF's paper (Jaggi et al. 2015). In the AGI framework, the weights α^i are:

$$\alpha^i = \frac{f_i (m^i)^{\beta}}{\sum_{j=1}^n f_j (m^j)^{\beta}} = \frac{f_i (m^i)^{\beta}}{\sum_{j=1}^n f_j (m^j)^{\beta}} L_i (m^i) \quad (4)$$

used later due to self-normalization, $L_i(m)$ the likelihood function, and $\beta(m)$ the prior function that is updated at every iteration k . The main idea of adaptive importance is that it depends if but was heavier table.

significant weights, we suggest an approach based on tempered likelihood function, it is later in the likelihood formula. The tempering factor is adapted (optimized) based on RE models.

we're likelihood function $L_i(m, \beta)$:

$$L_i (m, f_i) = \exp \left[\frac{1}{T} \log (L_i (m)) \right] \quad (5)$$

with the tempering factor β (if $\beta = 1$ we have $L_i(m^i) = L_i(m)$), and the tempered likelihood becomes equivalent to the standard likelihood function. In this sense, the tempered likelihood is a normalized version of the standard likelihood.

Peer Community Journal

Search articles, authors, ...

Table of Contents

- Pre- and post-exposition behavioral strategies to protect eggs against estuarine winter cold in an insect with maternal care
- Analysis of synthetic bacterial communities in the plant pest *Bemisia tabaci* reveal high prevalence of Candidatus *Hemiptera* asiatica in the African continent

RAI

Préparation des articles - Soumettre un article - Appliquez les commentaires

Volume 2 (2021) - no. 1 - p. 35-48

Traitement d'images et Apprentissage Automatique pour la Vibriose de Pétoncles

Lucie Melchior, ...

Abstract

À l'issue des dernières élections, les chercheurs ont mis au point des méthodes d'intelligence artificielle pour aider les agriculteurs à résoudre leurs problèmes, en particulier la gestion des maladies des cultures. Cependant, ce n'est qu'un début et il reste beaucoup à faire. Dans cet article, nous nous concentrons sur la gestion des cultures de pétoncles, un problème complexe qui nécessite une approche innovante. Nous présentons une méthode basée sur l'apprentissage automatique pour la gestion d'images de pétoncles, qui permet de détecter et de classer les maladies des cultures. Cette méthode est basée sur l'apprentissage automatique et permet de détecter et de classer les maladies des cultures. Cette méthode est basée sur l'apprentissage automatique et permet de détecter et de classer les maladies des cultures.

Browsing

Browsing a journal website and accessing articles...

The first screenshot displays the journal's homepage with a search bar and a 'Table of Contents' section. The second screenshot shows a specific article page with a title, authors, and abstract. The third screenshot shows the journal's logo and contact information.



**ALGEBRAIC
COMBINATORICS**

Editors: Ronitt Rubinfeld & Richard Lipton
Editorial Board: ...
Volume 1, Issue 1 (2016) ...

Searching

Searching articles in a journal website. . .

The screenshot shows the homepage of the journal 'ANNALES DE L'INSTITUT FOURIER'. The header includes the journal logo, the title 'ANNALES DE L'INSTITUT FOURIER', and navigation links: 'ABOUT THE JOURNAL', 'EDITORIAL BOARD', 'SUBMIT A PAPER', and 'SUBSCRIPTION'. There are also flags for English and French, and a 'TeX' icon.

The main content area features a search bar with the text 'Search articles, authors...' and a search button. Below the search bar, there are filters for 'Articles to appear' and 'Browse issues'. A dropdown menu is open, showing search criteria: 'NOT', 'Author', 'All', 'Title', 'Date', 'References', and 'Full text'. The search results are displayed in a list format, with the first result being 'Commutability of groups of trees' by Carette, Mathieu. Other results include 'Group orderings, dynamics, and rigidity' by Mann, Kathryn; Pivas, Cristóbal; 'Diffraction of elastic waves by edges' by Katernelson, Vitaly; and 'Invariants de Hesse S_{mu} S -ordinaires [S_{mu} S -ordinary Hesse invariants]' by Hernandez, Valentin. A 'View More' link is present at the bottom of the results.

The footer contains information about the publisher (Centre Mersenne), the supporting organization (Institut Fourier), and the developer (Mathdoc).

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 Mostrel (Clermont Université, CNRS/IN2P3, Clermont-Ferrand) and Marie-Hélène Schune (Université Paris-Saclay, CNRS/IN2P3, Orsay)

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www.centre-mersenne.org

Yusef Nir and Vincenzo Vagnoni

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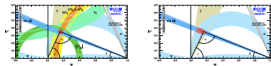


Figure 1. The constraints in the (ρ, η) plane from (left) all relevant processes, and (right) from CP-violating asymmetries in B decays only [31].

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^+ interactions with $\bar{u}_i d_j$ pairs (where $u_{i,2,3} = u, c, t$, and $d_{i,2,3} = d, s, b$)

$$S_{W^+} = -\frac{g}{\sqrt{2}} \bar{u}_i V_{ij} W^+ d_j + h.c. \quad (12)$$

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

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

The fact that all quark flavour-violating processes and all CP-violating processes depend on only three real (λ, A, ρ) and one imaginary (η) parameters makes the CKM mechanism of flavour and CP violation subject to stringent tests. Inevitably, 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

$$\mathcal{P}(\text{BR}(A \rightarrow c)) = \frac{2\text{Im}(\beta - \rho)}{\eta^2 + (1 - \rho)^2} \quad (14)$$

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

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

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

respectively. As there is a region in the (ρ, η) 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



INSTITUT DE FRANCE
Académie des sciences

Comptes Rendus Chimie

J. Brahmî, 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/crdcm.20>

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www.centre-mersenne.org

Journal layout: Chemistry

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J. Brahmî et al.

Table 3. Electrical parameters of the (TfO/PVA) system

Complex	I_s (A)	Φ_b (V)
[Zn(TMPPP)(4,4'-bipy)]2(4,4'-bipy)2H ₂ O	6.027×10^{-8}	1.2533

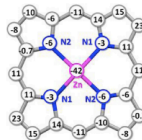


Figure 4. Schematic representation of the porphyrin macrocycle of the [Zn(TMPPP)(4,4'-bipy)] complex showing the displacements of each atom from the 24-atom mean plane in units of 0.01 Å.

[Zn²⁺(TMPPP)(HMTA)], we note that our complex (B) has a high barrier height Φ_b compared to the related zinc-IMTA derivative. This is most probably due to the aromatic ligand 4,4'-bipy for (B), 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 6.027×10^{-8} A for zinc(II)-4,4'-bipy derivative, which is very low compared to that of the related [Zn²⁺(TMPPP)(HMTA)] complex whose value is equal to 6.57×10^{-4} A. 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_s 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 (B), 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, μ 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 [Zn(TMPPP)(4,4'-bipy)](4,4'-bipy)2H₂O. In this regime, the current density varies following equation (3):

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

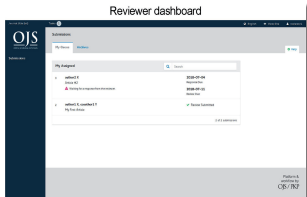
Here ϵ_0 is the material permittivity (assumed to be $4\epsilon_0$, where ϵ_0 is the vacuum permittivity) and μ is the effective carrier mobility equal to $6\mu_0$, which is the free charge fraction with $\beta = p_1(p + p_2)$. Parameters p and p_2 represent the free and trapped charge-carrier densities, respectively, d is the film thickness and V is the applied voltage.

According to the SCLC model (3), μ_{eff} for the film containing complex (B) 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-distyrylcarbazole p -type species [33–35].

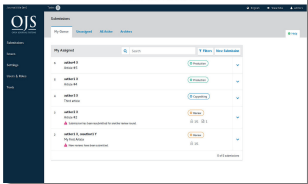


Managing submissions - OJS

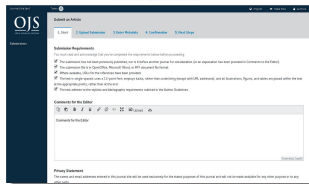
Reviewer dashboard



Editor dashboard



Author submission



Managing submissions - PCJ

Submissions awaiting approval

PCI	Recommendation DOI	Title	PCI DOI	User	Actions
Evolutionary Biology	10.24072/pci.evolbio.100055	Exploring the effects of ecological parameters on the spatial structure of genetic tree sequences	10.24072/pcijournal.439	matthieu@mathdoc.fr	Withdraw Resubmit Publish

Accepted submissions

PCI	Recommendation DOI	Title	PCI DOI	User	Actions
Ecology	10.24072/pci.ecology.100034	Hierarchical multi-scale environmental effects on agricultural land population dynamics: a case study on the annual onset of <i>Colletotrichum doratovoii</i> population growth in Sainjean vineyards	10.24072/pcijournal.439	matthieu@mathdoc.fr	Withdraw
Ecology	10.24072/pci.ecology.100077	Effects of water nutrient concentrations on stream macroinvertebrate community stoichiometry: a large scale study	10.24072/pcijournal.441	matthieu@mathdoc.fr	Withdraw
Entomology	Entomology of lamprolides to	matthieu@mathdoc.fr	Withdraw

Scroll to:

Title:

Keywords:

References:



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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 we want these costs to remain **very low when not zero**, especially for our journals that have few financial means.

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Business model - revenues

- 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 directly supported by CNRS)
 - + funding from (essentially french) institutions, foundations, libraries;
 - + national and European grants (ex: EOSC);
- Recurrent costs associated to optional services, proportional to the volume published: covered by invoicing the journal or its supporting institution at almost cost price or by specific institutional supports. (not applicable for journals directly supported by CNRS)

centre Mersenne fees

The fees are official and transparent (auditable). They depend on the services you request and are broken down as follows:

Initial cost of installation

- Without dedicated OJS instance: 3 175 €
- With dedicated OJS instance: 4 487 €

Annual maintenance and support

- Basic maintenance without OJS: 1 066 €
- Full maintenance: 2 429 €

Optional services

- Typesetting (simple layout, maths): 7,5 € per page
- Typesetting word with HTML: 11,6 € per page
- Corrections / revisions: 7,6 € per page
- Editorial managing
- Printing...

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A journal conversion: 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 found and become editor of the new one published by centre Mersenne, under the new name: *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.
- **Financial support:** French libraries network, Dutch national research institute for mathematics and computer science, MathOA...

Another journal conversion: *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
- **Financial support:** CNRS in 2020, Académie des sciences...

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 (\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)

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On-going projects

- **Semi-automatic translation of articles:** an online interface enabling scientists to translate automatically and post-edit articles of the *Comptes Rendus de l'Académie des sciences*. Available already for chemistry, biology, earth sciences, see next slide. Will be extended to maths as soon as HTML format available.
- **Full-text for maths articles:** \LaTeX and Word \rightarrow HTML online. Should be available by the end of 2024.

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 a public 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 \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

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

Figure: Authentication, automatic translation then human post-editing

- Bosanski
- Bahasa Indonesia
- Čeština
- Dansk
- Deutsch
- English
- Eesti
- Español
- Français
- Hrvatski
- Íslenska
- Italiano
- Latviešu
- Lietuvių
- Lëtzebuergesch
- Magyar
- Malti
- Nederlands
- Polski
- Português
- Rumânî
- Română
- Shqip
- Suomi
- Slovenčina
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1. Introduction

Mayotte Island is one of the four islands of the Comoros volcanic archipelago. It is located in the Indian Ocean in the Mozambique Channel between Madagascar and Africa. Mayotte Island shows marked volcanic geomorphology. Volcanism in Mayotte started about 10 to 15 My ago (Andri et al., 2021). This behavior continued during the Quaternary, with the last volcanic eruption occurring 7000 years ago (Zinke et al., 2001). The source of volcanic activity in Mayotte is still debated. Enavick and Dancas (1992) suggests that the origin of the archipelago is a hotspot, while Nougier et al. (1996) postulates that the volcanism corresponds to the reactivation of old and deep lithospheric fractures. Michon (2016) also rejects the idea of a hotspot and proposes that the Comoros archipelago volcanic activity can be explained by lithospheric deformation related to the western extension of the East-African rift.

In general, the archipelago of Comoros is considered a moderately seismic region. However, since May 10, 2018, unusual intensity seismicity has been observed in the east of Mayotte Island. From May 10, 2018 to July 31, 2019 almost 2000 events with local magnitude $M_L \geq 3.5$, were recorded (BEVOSIMA/IFGP 2021). The largest earthquake occurred on May 15, 2018, with a magnitude of $M_w = 5.8$. After July 2019, the number of earthquakes decreased, showing less than a hundred earthquakes with magnitude $M_L \geq 3.5$ per month (BEVOSIMA/IFGP 2019; Sazari et al., 2021). Although the most significant earthquakes occurred at the beginning of the crisis, the region remains active in 2021 with 141 $M_L \geq 1$ Volcano-Tectonic (VT) earthquakes located in December 2021 (BEVOSIMA/IFGP 2021). Geodetic data recorded in Mayotte show transient displacements of approximately 17–20 cm to the east and subsidence of 10 to 15 cm (Andri et al., 2021).

1. Introduction

L'île de Mayotte est l'une des quatre îles de l'archipel volcanique des Comores. Elle est situ e dans l'océan Indien dans le canal du Mozambique entre Madagascar et l'Afrique. L' le de Mayotte pr sente une g omorphologie volcanique marqu e. Le volcanisme   Mayotte a commenc  il y a environ 10   15 ans (Andri et al., 2021). Ce comportement s'est poursuiv  pendant le Quaternaire, avec la derni re  ruption volcanique marqu e survenant il y a 7000 ans (Zinke et al., 2001). La source de l'activit  volcanique   Mayotte est encore d battue. Enavick et Dancas (1992) sugg rent que l'origine de l'archipel est un point chaud, tandis que Nougier et al. (1996) postulent que le volcanisme correspond   la reactivation de fractures lithosph riques anciennes et profondes. Michon (2016) rejette  galement l'id e d'un hotspot et propose que l'activit  volcanique de l'archipel des Comores puisse s'expliquer par une d formation lithosph rique li e   l'extension sud de l'rift est-africain.

En g n ral, l'archipel des Comores est consid r  comme une r gion mod r ment sismique. Cependant, depuis le 10 mai 2018, une sismicit  intense inhabituelle a  t  observ e dans l'est de l' le de Mayotte. Du 10 mai 2018 au 31 juillet 2019, plus de 2000  vènements de magnitude locale $M_L \geq 3,5$ ont  t  enregistr s (BEVOSIMA/IFGP 2019). Le plus grand tremblement de terre s'est produit le 15 mai 2018, avec une magnitude de $M_w = 5,8$. Apr s juillet 2019, le nombre de tremblements de terre a d cr , affichant moins d'une centaine de tremblements de terre de magnitude $M_L \geq 3,5$ par mois (BEVOSIMA/IFGP 2021; Sazari et al., 2021). Bien que les  vènements de terre les plus importants se soient produits au d but de la crise, la r gion reste active en 2021 avec des tremblements de terre Volcano-Tectoniques (VT) de 141 MW situ s en d cembre 2021 (BEVOSIMA/IFGP 2021). Les donn es g od siques enregistr es   Mayotte montrent des d placements transitoires d'environ 17-20 cm vers l'est et une subsidence de 10   15 cm (Andri et al., 2021).

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 magmatique au début de la crise volcano-sismique de Mayotte.


Article traduit par Olivier Labbe

Date de publication :
Avis : L'archipel des Comores était généralement considéré comme une région modérément sismique. Cependant, depuis mai 2018, une sismicité inhabituelle a été observée au large de la côte ouest de l'île de Mayotte. Suite à cette augmentation de l'activité sismique, des campagnes sismologiques ont conduit à la découverte d'un nouveau volcan sous-marin, indiquant que la sismicité observée avait une origine volcanique. Dans cette étude, nous combinons les solutions de mouvement du moment (Mw) de 2011 des séismes de forte magnitude en utilisant des fonctions de Green 3D et nous analysons leurs composantes non-doublet sous DC. En accord avec les rapports précédents, nos résultats indiquent que le séisme a agité vers le haut en mai-juin 2018 avec un moment croissant d'événements sous DC. Nous montrons que les composantes sous-DC, observées dans nos solutions et dans les catalogues précédemment publiés ou présentés par correspondance à l'orientation ou à la fermeture des dipes, ont les caractères de rupture observées récemment dans des séismes de magma intralabiale. En fait, étant que les formes d'onde peuvent être satisfaitement bien expliquées avec des sources de cisaillement peu, nous postulons que les composantes sous DC sont une manifestation des artefacts dus à des hétérogénéités structurelles peu profondes sous-marinées. La plupart des intralabiales de cette nature sont caractérisées de glissement de longue endurance avec le régime de failles pré-tensionnaires changeant par le régime de contraintes régional et détectables par l'augmentation de la contrainte principale par le transfert de régime vers le haut.

Article original :
Catalina Morales-Yáñez^{1,2}, Zacharie Duputel^{1,4} et Luis Rivera^{1,5}
Exploring the link between large earthquakes and magma transport at the onset of the Mayotte volcano-seismic crisis
Volume 354, Special Issue 02 (2022), p. 137-152
<https://doi.org/10.5802/crm.204>

Part of Special Issue: The Mayotte volcano-seismic crisis of 2018-2021 in the Comores archipelago (Olivier Labbe)

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Précédent Feuilleter Tome 354 (2022) no. S2 p. 137-152 Suivant

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

Titre original : Exploring the link between large earthquakes and magma transport at the onset of the Mayotte volcano-seismic crisis

Catalina Morales-Yáñez^{1,2}  ; Zacharie Duputel^{1,4}  ; Luis Rivera^{1,5}  

Comptes Rendus. Géoscience, Tome 354 (2022) no. S2, pp. 137-152.

Article du numéro thématique : La crise sismo-volcanique de 2018-2021 de Mayotte dans l'archipel des Comores (Canal du Mozambique)

Traduit par : Olivier Labbe³ 



Résumé

L'archipel des Comores était généralement considéré comme une région modérément sismique. Cependant,

Word to HTML conversion

Figure: HTML editor integrated in the Peer Community Journal workflow

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By combining equations (1a), (3a), (4), (5a), (8a) and (1b), (3b), (5b), (8b) we obtain the following system of two equations:

(9a)
$$\frac{dF_i}{dt} = bG\left(\frac{M_i}{F_i+M_i}, h_i\right) F_i - \frac{r}{K} \sum_{j=1}^2 c_{ij} F_j - dF_i - \frac{p(1-\alpha_i)}{1 + \left(\sum_{j=1}^2 S_{ij} \lambda_j F_j\right) \times \left(1 - \beta \frac{\sum_{j=1}^2 S_{ij} M_j}{\sum_{j=1}^2 S_{ij} (F_j + M_j)}\right)} F_i$$

Mathematics in TeX

Write your TeX here

$$bG\left(\frac{M_i}{F_i+M_i}, h_i\right) = b \times \text{real}(C) \times \text{with} \left(\frac{M_i}{F_i+M_i}, h_i \right) \times \text{real}(F_i) - \text{real}(F_i) \times \text{real}(K) \times \text{sum}_{j=1}^2 c_{ij} F_j - d \times \text{real}(F_i) - \frac{p(1-\alpha_i)}{1 + \left(\sum_{j=1}^2 S_{ij} \lambda_j F_j\right) \times \left(1 - \beta \frac{\sum_{j=1}^2 S_{ij} M_j}{\sum_{j=1}^2 S_{ij} (F_j + M_j)}\right)}$$

[TeX documentation](#)

$$\frac{dF_i}{dt} = bG\left(\frac{M_i}{F_i+M_i}, h_i\right) F_i - \frac{r}{K} \sum_{j=1}^2 c_{ij} F_j - dF_i - \frac{p(1-\alpha_i)}{1 + \left(\sum_{j=1}^2 S_{ij} \lambda_j F_j\right) \times \left(1 - \beta \frac{\sum_{j=1}^2 S_{ij} M_j}{\sum_{j=1}^2 S_{ij} (F_j + M_j)}\right)} F_i$$

OK Cancel

$$(8b) P_i^d = \frac{p}{1 + \left(\sum_{j=1}^2 S_{ij} \lambda_j F_j\right) \times \left(1 - \beta \frac{\sum_{j=1}^2 S_{ij} M_j}{\sum_{j=1}^2 S_{ij} (F_j + M_j)}\right)} \times M_i$$

By combining equations (1a), (3a), (4), (5a), (8a) and (1b), (3b), (5b), (8b) we obtain the following system of two equations:

$$(9a) \frac{dF_i}{dt} = bG\left(\frac{M_i}{F_i+M_i}, h_i\right) F_i - \frac{r}{K} \sum_{j=1}^2 c_{ij} F_j - dF_i - \frac{p(1-\alpha_i)}{1 + \left(\sum_{j=1}^2 S_{ij} \lambda_j F_j\right) \times \left(1 - \beta \frac{\sum_{j=1}^2 S_{ij} M_j}{\sum_{j=1}^2 S_{ij} (F_j + M_j)}\right)} F_i$$

$$(9b) \frac{dM_i}{dt} = b\left(1 - G\left(\frac{M_i}{F_i+M_i}, h_i\right)\right) F_i - dM_i - \frac{p}{1 + \left(\sum_{j=1}^2 S_{ij} \lambda_j F_j\right) \times \left(1 - \beta \frac{\sum_{j=1}^2 S_{ij} M_j}{\sum_{j=1}^2 S_{ij} (F_j + M_j)}\right)} M_i$$

Table 1 - Variable and parameters, with their signification and values.

Abbreviation	Description	Interval
	Number of females in species i	$F_i \geq 0$
	Number of males in species i	$M_i \geq 0$
	Male proportion in species i	$\lambda_i \in [0, 1]$
	Function regulating sex-ratio in the offspring	
	Relative investment in sons in species i	$\alpha_i \geq 0$
	Birth rate	$b \in [0, 7, 1]$

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.
- **Adapt our platform to new formats** (not all the journals in \LaTeX).
- Develop efficient and ethical services (semi-automatic translation, full-text...).
- Achieve the procedures and contracts taking into account the public administration constraints.
- Consolidate its business model to reinforce the sustainability.
- Hire and train 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 convert journals in open access.**

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Thanks!



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Why Mersenne?

Marin Mersenne (1588-1648) has been nicknamed “the secretary general of the republic of scientific letters”, as he acted as a hub for scientific information of his time, just before the advent of journals and academies.

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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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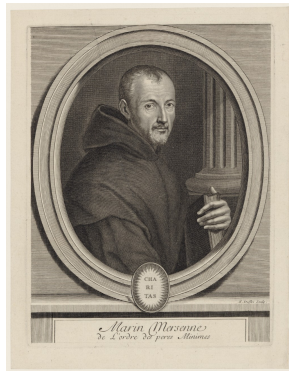
A quotation (Baillet, 1691)

“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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