Publication of mathematical research: who, how, for who, at what cost?

Benoît R. Kloeckner

Rentrée des masters de la Fondation Mathématique Jacques Hadamard

5 septembre 2018
The actors of mathematical publications

Steps of an article publication

Access models

Economic models
Different roles
Different roles

- authors,
Different roles

- authors,
- editors,
Different roles

- authors,
- editors,
- referees,
Different roles

- authors,
- editors,
- referees,
- production & distribution,
Different roles

- authors,
- editors,
- referees,
- production & distribution,
- access & archiving.
Different roles

- authors,
- editors,
- referees,
- production & distribution,
- access & archiving.

}\{ mathematicians

}\{ publisher

}\{ libraries
Different roles

- authors,
- editors,
- referees,
- production & distribution,
- access & archiving.

\{ mathematicians
\}

\{ publisher
\}

\{ libraries
\}
1. The actors of mathematical publications

2. Steps of an article publication
   - Writing
   - Submission
   - Peer-reviewing
   - Production and publication

3. Access models

4. Economic models
Steps of an article publication

- Writing
- Submission
- Peer-reviewing
- Production and publication
Writing an article

One or several mathematicians work their way through a problem.
Writing an article

One or several mathematicians work their way through a problem. They need access to existing literature:

- library’s subscriptions,
- preprints in open repositories,
- etc.
Writing an article

One or several mathematicians work their way through a problem. They need access to existing literature:

- library’s subscriptions,
- preprints in open repositories,
- etc.

When they succeed, they write a paper with \LaTeX, a compiled language,

- ensuring precise mathematical typography,
- producing camera-ready pdf.
ISOLATION, EQUIDISTRIBUTION, AND ORBIT CLOSURES FOR
THE $SL(2, \mathbb{R})$ ACTION ON MODULI SPACE.

ALEX ESKIN, MARYAM MIRZAKHANI, AND AMIR MOHAMMADI

ABSTRACT. We prove results about orbit closures and equidistribution for the
$SL(2, \mathbb{R})$ action on the moduli space of compact Riemann surfaces, which are anal-
ogous to the theory of unipotent flows. The proofs of the main theorems rely on the
measure classification theorem of [EMi2] and a certain isolation property of closed
$SL(2, \mathbb{R})$ invariant manifolds developed in this paper.

1. INTRODUCTION

Suppose $g \geq 1$, and let $\alpha = (\alpha_1, \ldots, \alpha_n)$ be a partition of $2g - 2$, and let $\mathcal{H}(\alpha)$ be a
stratum of Abelian differentials, i.e. the space of pairs $(M, \omega)$ where $M$ is a Riemann
surface and $\omega$ is a holomorphic 1-form on $M$ whose zeroes have multiplicities $\alpha_1 \ldots \alpha_n$.
The form $\omega$ defines a canonical flat metric on $M$ with conical singularities at the zeros
of $\omega$. Thus we refer to points of $\mathcal{H}(\alpha)$ as flat surfaces or translation surfaces. For an
introduction to this subject, see the survey [Zo].
The space $\mathcal{H}(\alpha)$ admits an action of the group $SL(2, \mathbb{R})$ which generalizes the action
of $SL(2, \mathbb{R})$ on the space $GL(2, \mathbb{R})/SL(2, \mathbb{Z})$ of flat tori.

Affine measures and manifolds. The area of a translation surface is given by
$$a(M, \omega) = \frac{i}{2} \int_M \omega \wedge \bar{\omega}.$$
Steps of an article publication

- Writing
- Submission
- Peer-reviewing
- Production and publication
Submission(s)

Researcher searches...
Submission(s)

Researcher searches...
And finds!

Preprint
Submission(s)

Researcher searches...
And finds!

Preprint

Journal A
Submission(s)

Researcher searches...
And finds!

Preprint

Journal A

Nope.
Submission(s)

Researcher searches...
And finds!

Preprint

Journal A

Journal B

Nope.

Yes!
Submission(s)

Researcher searches...
And finds!

Nope.

Yes!

Preprint

Open Repository

Prépublication

Prépublication

Prépublication

Journal A

Journal B

Article

Article

Article

Article

Benoît R. Kloeckner

Mathematical publication

rentrée Masters FMJH 2018
Two questions

- How do authors choose the journal?
- How does a journal choose whether to accept a given article?
How to choose a journal?

Most common criterion:

- Compromise between prestige and acceptance probability.

→ seek for a potentially interested editor.
How to choose a journal?

Most common criterion:

- Compromise between prestige and acceptance probability.

→ seek for a potentially interested editor.

Other criteria include:

- Open Access policy,
- price,
- beauty, sentimental attachment.
Steps of an article publication

- Writing
- Submission
- Peer-reviewing
- Production and publication
Peer reviewing

Researcher submits Preprint to Editor of Journal B.
Peer reviewing

Researcher submits Preprint to Editor.
Editor makes a request for review.
Researcher resubmits.
Editor makes another request.
Editor accepts the work.

Journal B
Peer reviewing

Researcher submits Preprint to Editor of Journal B.

Researchers evaluate Preprint.

Editors evaluate Preprint.

Journal B

Editor
Peer reviewing

- Researcher
- Preprint
- Editor
- Report
- Journal B
- Editor
- Editor
- Researcher
- Report
Peer reviewing

Journal B
Editor
Editor
Editor
Editor
Researcher
Researcher
Preprint

answers
Report
Report
Report

Benoît R. Kloeckner
Peer reviewing

- Researcher
- Preprint
- Editor
- Journal B
- Production
- Publication
- Article
- Editor
- Editor
- Editor

transfers copyright

answers
Criteria to judge an article

The editorial board judges whether the article is:

- correct,
- within scope (field, length),
- interesting/important,
- clearly written.
Criteria to judge an article

The editorial board judges whether the article is:

- correct,
- within scope (field, length),
- interesting/important,
- clearly written.
Criteria to judge an article

The editorial board judges whether the article is:

- correct,
- within scope (field, length),
- interesting/important,
- clearly written.

They may

- accept as is,
- accept with revision,
- ask revision before reassessing,
- reject.
Pressure on journals

Most journals receive far more articles than they can publish;

- some reject over 90% of submissions,
- the answer delay varies typically between 3 months and 2 years,
- some use desk-reject,
- the process is quite subjective.
2 Steps of an article publication

- Writing
- Submission
- Peer-reviewing
- Production and publication
Production and publication 1 : formatting

The journal alters the source file provided by the authors:

- adjustment to the journal template,
- corrections (language, typos),
- proper typesetting,
Production and publication 1 : formatting

The journal alters the source file provided by the authors:

- adjustment to the journal template,
- corrections (language, typos),
- proper typesetting,
- addition of random mistakes.
Production and publication 1 : formatting

The journal alters the source file provided by the authors:

- adjustment to the journal template,
- corrections (language, typos),
- proper typesetting,
- addition of random mistakes.

The result is called the galley proofs of the article.
Production and publication 2 : checking galley proofs

Authors are given 3 to 5 days to check galley proofs:
- answer questions from production’s team,
- check signaled modifications,
- play the “spot the difference” game.
The article is finally published:
- online first,
- then in a volume of the journal,
- often years after the research was finalized.
1. The actors of mathematical publications
2. Steps of an article publication
3. Access models
4. Economic models
Subscription model

Libraries subscribe to

- receive paper volumes,
- get electronic access for researchers.

Electronic access is restricted to subscribers (by password or IP filtering).
Subscription model

Libraries subscribe to

- receive paper volumes,
- get electronic access for researchers.

Electronic access is restricted to subscribers (by password or IP filtering).

The cost of electronic distribution is largely devoted to prevent access to non-subscribers.
Green Open Access

An article is *Green OA* if a preprint version is made available by the authors in an open repository (arXiv, HaL, Zenodo, etc.)

- goes along with subscription model (the journal policy must allow it),
- pretty common in maths,
- preprints can differ from published articles.
Gold Open Access

An article is *Gold OA* if the *version of record* is made available under an *open licence* by the journal.

- incompatible with subscriptions (except paper),
- getting traction for a decade in some fields,
- problem of the economic model.
The actors of mathematical publications

Steps of an article publication

Access models

Economic models
Subscription prices

Prices have risen at large commercial publishers:


0.26 $/p versus 0.82 $/p to 2.41 $/p
Subscription prices

Prices have risen at large commercial publishers:

- *Journal of Mathematical Sciences* $16704 / 6935$ pp

$0.26 \$/p versus $0.82 \$/p to $2.41 \$/p
Publishers tend to **bundle** journals together to offer “discounts”.

National negotiations lead by consortia (Couperin in France).

Builds a dependency: no contract means no access to all publisher’s journals.
Bundles and consortia

Publishers tend to bundle journals together to offer “discounts”.

National negotiations lead by consortia (Couperin in France).

Builds a dependency: no contract means no access to all publisher’s journals.
Bundles and consortia

Publishers tend to bundle journals together to offer “discounts”.

National negotiations lead by consortia (Couperin in France).

Builds a dependency: no contract means no access to all publisher’s journals.
Green OA

Green OA is very cheap (arXiv: < 10 $/article).

Open repositories are mostly funded by research institutions.

Subscriptions are still needed since not all papers are deposited.
Gold OA 1: Article Processing Charges

Most well-know way to fund a Gold OA journal is to ask authors’ institutions to pay APC.

- APC vary from $500 to $5000,
- entails paperwork for each article,
- some cannot afford to publish (despite waivers),
- predatory journal try to get that money.
Gold OA 1: Article Processing Charges

Most well-know way to fund a Gold OA journal is to ask authors’ institutions to pay APC.

- APC vary from $500 to $5000,
- entails paperwork for each article,
- some cannot afford to publish (despite waivers),
- predatory journal try to get that money.

Temptation to bundle APC at the national level.
Gold OA 2: Diamond/Platinum

Many Gold OA journals ask no money to authors. Several models:

- cheap operations (*Journal of Machine Learning Research*),
- subsidies (*Annales de l’Institut Fourier*),
- cooperative library funding (*Glossa* in Linguistics),
- freemium, etc.
Gold OA 2: Diamond/Platinum

Many Gold OA journals ask no money to authors. Several models:

- cheap operations (*Journal of Machine Learning Research*),
- subsidies (*Annales de l’Institut Fourier*),
- cooperative library funding (*Glossa* in Linguistics),
- freemium, etc.

*Algebraic combinatorics* is the heir of Springer’s *Journal of Algebraic Combinatorics* and runs on a mix of the above models.