

Primo

The New Sustainable Solution for Publishing

Presented at the International TUG Conference, Bonn, Germany, July 2023

- Today we are introducing a new tool called **Primo** -- an authoring, submission, and proofing tool.
- In the recent past conferences, we introduced TeXFolio, Ithal, and Neptune.

Primo

- Primo is designed as a total solution for many of the known issues in the journal publishing world.
 - Primo is a cloud-based authoring, submission, and proofing framework.
 - With the help of the tool, the author plays a major role in publishing their articles.
 - Minimize the post-processing or intervention of the other tools to make the underlying XML valid.
 - Speed-up the publishing process.
- It combines the advantages of XML-based workflows that facilitate controlled authoring and/or editing in accordance with the specific DTDs.
 - PDF rendering with the help of TeX.
 - Provide a better user experience with the help of an elegant and modern interface.
 - Reduce the end-to-end production effort from authoring to publishing and to target quicker publishing.

Features

- A tool from the house of TeX people.
 - Introduces the beauty of TeX typesetting to the non-TeX community.
 - Compatible for both TeX and non-TeX communities.
 - WYSIWYG and non-WYSIWYG mode editing.
 - Three modules - Authoring, Submission, and Proofing tool.
 - Collaborative editing.
- Journal template-based PDF generation using TeX.
 - Content profiling of the sources.
 - Overrides the limitations of math rendering in browsers.
 - Form-mode editing interface for frontmatter and bibliography.
 - A well-designed proofing environment with all relevant features to help easy proofing.
 - Since it is XML-based, it is a DTD-compliant tool also.

Primo addresses these basic issues

Problem	Solution	Beneficiary
Authors' difficulty in understanding the journal's requirements.	Addresses by providing a plug and play type environment.	Authors
Multiple authors need to work on the same document separately.	Collaboration	Authors
Chances of missing materials during submission.	Content Profiling	Authors, Typesetters, Publishers
Back and forth querying for problems in the sources.	Completeness check	Authors, Typesetters, Publishers
Author formats her document without knowing the final look and feel or layout of the published article.	Journal-based-templates	Authors, Typesetters, Publishers

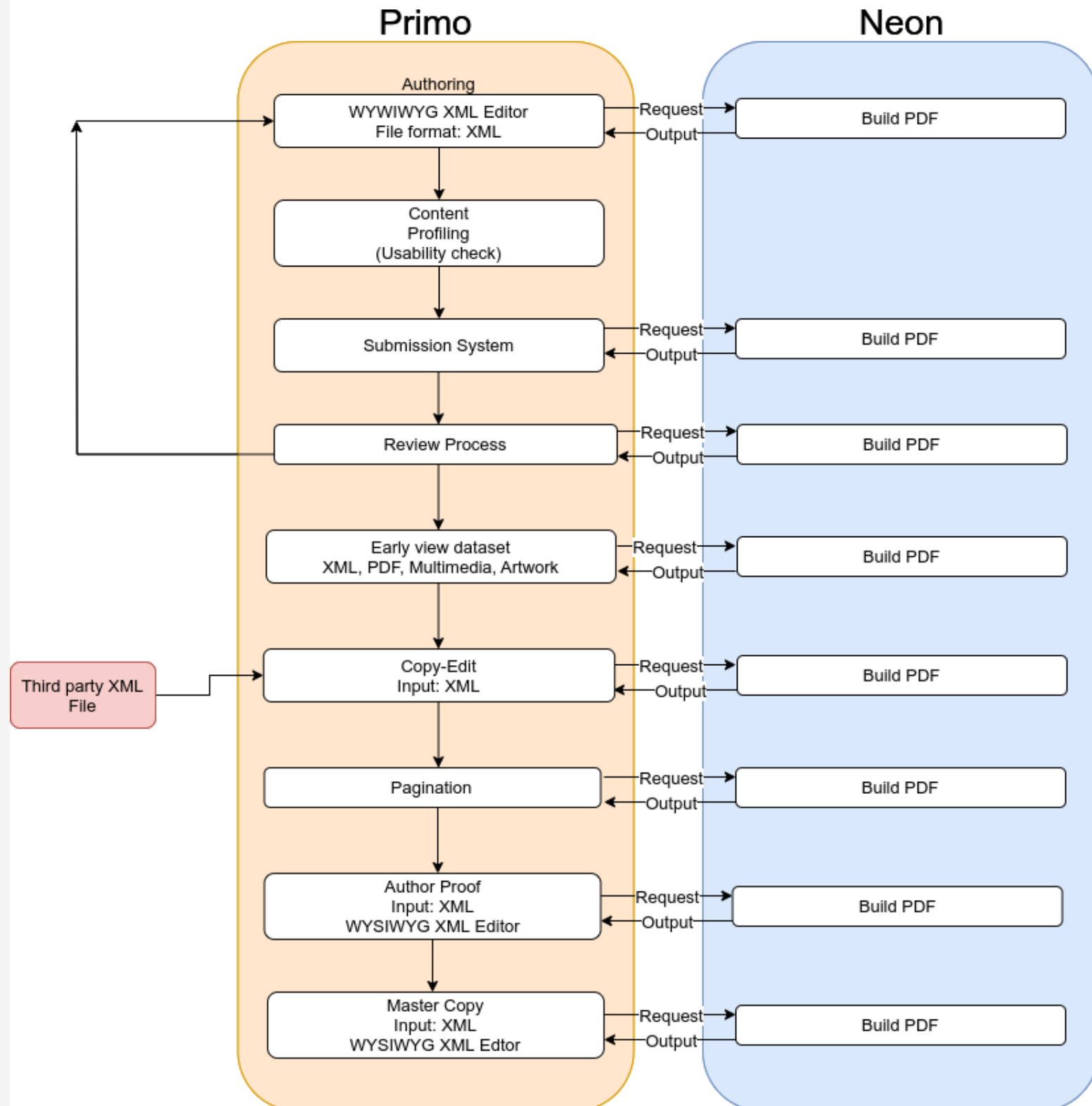
Primo addresses these basic issues

Problem	Solution	Beneficiary
Difficulty in converting to a different journal template when it is rejected.	Easy formatting	Authors
Multiple authors need to work on the same document separately.	Collaboration	Authors
Difficulty in identifying surname, given names, city, state, postcode etc.	Form-mode editing	Authors, Typesetters,
Problems in the submission process, support seeking and time delay	Self explanatory	Authors, Publishers
Constraints in the submission systems.	User friendly submission process	Authors

Primo addresses these basic issues

Problem	Solution	Beneficiary
Constraints in the HTML proofing systems.	TeX generates PDF.	Authors
Problems with the unformatted PDF generated by the browser.	TeX generates PDF.	Authors
Validating corrections.	Rule-based validation process	Authors, Typesetters, Publishers
Unavailability of a file manager.	Presence of an efficient file manager	Authors
Constraints in the submission systems.	User friendly submission process	Authors

Primo Authoring, Submission & Proofing Tool



The Workflow

How Primo works? **The Authoring tool**

- There is a file manager and all the file operations like creating a document, editing, renaming, moving, zip, unzip, uploading, downloading, etc. can be done.
- Authors can prepare a new document in WYSIWYG mode.
- They can create aesthetically beautiful PDFs using TeX without knowing TeX.

- They can create a document according to the DTD the publisher uses.
- LaTeX math editing tool.
- Spell-check, word count.
- Do Hyperlinking.
- Sharing the document with others and collaborative editing.

How Primo works? **The Submission tool**

- Since the materials created will be according to the journal style by default, no need of referring to the lengthy GFA.
- Usability checking ensures all the contents are available.

- Download the required files only as a bundle to load them into the publisher's submission system.
- The bundle will contain a manifest.xml which will show the proper file type to be selected in the publisher's submission tool.

How Primo works? **The Proofing tool**

- Typesetters load a dataset with the XML version of the manuscript along with necessary assets like artwork, multimedia content, etc. to the drive which will in turn return a unique URL to the document.
 - Using the above URL, authors can access the proofs of their manuscripts after typesetting by the typesetters.
 - Start with the track changes and accept/reject them.
- Then resolving queries.
 - Continue editing and the mode of operation is self-explanatory. Authors can guide themselves and reach out to the features/functions available for editing without the help of support.
 - Make changes. Ensure the corrections in the code. Generate a PDF and confirm the PDF version. If any further corrections are seen, just make it in the editor and again create a PDF.

How Primo works? **The Proofing tool**

- The corrections will be marked definitely in the underlying XML.
- Corrections can be done or verified simultaneously by multiple authors.

- Access can be restricted to view only or edit mode while sharing.
- Version control

Time-line

The release of the Platform is planned in three phases.



1

2

3

4

1. Tool bar
2. Drive
3. Import
4. Drive - Sort

Primo - Main Page

The screenshot displays the Primo web editor interface. At the top, there is a menu bar with 'Edit', 'Insert', 'Format', and 'Help'. Below it is a toolbar with various editing icons. The main content area is divided into three sections: a left sidebar for navigation, a central document editor, and a right sidebar for changes and comments.

Navigation: Authors, Bibliography, Structure

Sections: Figures, Tables, Formulas, Footnotes

Document Content:

A document of mathematics^{☆,☆☆}

The code (and data) in this article has been certified as Reproducible by Code: (<https://codexyz.com/>). More information on the Reproducibility Badge Initiative is available at <https://www.newjournal.com/physical-sciences-and-engineering/computer-science/journals>.

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☆☆The heuristic value of the theory of invariants arises from the isotropy of space.

Kevin C.A. (Kin)^{a,b,*,✉}, Bob B.B.^{b,1}, Stuart A.C.^c on behalf of STMDOCS Collaboration^b

- a Sayahna Foundation, JWA 34, Jagathy, Trivandrum, 695014, Kerala, India
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- c Sayahna Foundation, Trivandrum, Kerala, India
- * Corresponding author at: Sayahna Foundation, JWA 34, Jagathy, Trivandrum, 695014, Kerala, India.
- 1 Currently on leave.

Abstract

Pure Mathematics This book has been designed primarily for the use of first year students at the Universities whose abilities reach or approach something like what is usually described as scholarship standard. I hope that it may be useful to other classes of readers, but it is this class whose wants I have considered first. It is in any case a book for mathematicians: I have nowhere made any attempt to meet the needs of students of engineering or indeed any class of students whose interests are not primarily mathematical. I regard the book as being really elementary. There are plenty of hard examples (mostly at the ends of the chapters); to these I have added whatever was

Changes: Comments, Queries, Warnings (6), Assets

Info:

- Track changes
- Visualize >

Changes List:

- RI Deleted "located" [Accept] [Reject]
- RI Inserted Keyword [Accept] [Reject]
- RI Inserted "number theory" [Accept] [Reject]
- RI Inserted Keyword [Accept] [Reject]
- RI Inserted "quantities" [Accept] [Reject]

Document: dtd-full / Article / Body / Sections / Para/Section(s) / Section / Para/Section(s) / Para / Cross ref(s) / Text

Primo version: 0.2.23

Primo - List Menu

The image shows a screenshot of a Primo editor interface. At the top, there is a blue header bar with a bird icon and menu items: Edit, Insert, Format, and Help. Below this is a toolbar with various icons for text formatting and editing, including bold (B), italic (I), strikethrough (ABC), underline (U), and list creation (bulleted and numbered). The main editing area is divided into two panes. The left pane contains navigation and sections menus. The right pane shows a document with a title "Secure, recon... aided (hetero... NOMA netw...", an author "Xiang Zhao^{a,**}, Sun...", and a list of affiliations: "a Key Laboratory of Electronic Techn...", "b Guangxi Key Lab... Technology, Guil...", and "c Department of S... Indian Institute of India". A context menu is open over the list, showing options for numbering: "1. 2. 3.", "1) 2) 3)", "(1) (2) (3)", "[1] [2] [3]", "A) B) C)", "a) b) c)", "(a) (b) (c)", "I. II. III.", "i. ii. iii.", and "More Numbering...". The document text in the right pane includes "intelligent surface-", "-RF cooperative", and "itto^{b,**}".

Navigation Authors Bibliography Structure

Sections Figures Tables Formulas

Head
Abstract
Highlights
Keywords
1. Introduction
2. System model
3. Statistical characteristic of VLC link and RF link
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Secure, recon...
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Xiang Zhao^{a,**}, Sun...
a Key Laboratory of
Electronic Techn...
b Guangxi Key Lab...
Technology, Guil...
c Department of S...
Indian Institute of
India
* Corresponding a...
** New Corresponding Organisation, Address line 1, City of the address., State of
address.. Country of the address.

intelligent surface-
-RF cooperative
itto^{b,**}
mation Processing, Guilin University of
e, Guilin University of Electronic
cience, Department of Economics,
ave, New Avenue, City, State 695000,

Primo - Supports Multi-language

Navigation Authors Bibliography Structure

Sections Figures Tables Formulas

Head
Abstract
Keywords
1. Introduction
1.1. Background
1.2. Related works
1.3. Contributions
2. The main results
2.1. Notations and assumptions
2.2. Recursive algorithm and adaptive predictor
2.3. Global convergence results
3. Proofs of the main results
4. Numerical simulation
5. Concluding remarks
References

Malayalam:
ഫിസിക്സ് ബിരുദം നേടിയ താങ്കൾ എങ്ങിനെ കാർട്ടൂണിസ്റ്റായി മാറി, അതൊരു ജോലിയാക്കി മാറ്റാൻ എന്തെങ്കിലും നിർണായകമായ കാരണമുണ്ടോ?

Tamil:
இயற்பியலில் பட்டம் பெற்ற நீங்கள் எப்படி கார்ட்டூனிஸ்ட் ஆனீர்கள், அதை ஒரு வேலையாக மாற்ற ஏதாவது தீர்க்கமான காரணம் இருக்கிறதா?

Arabic:
كيف أصبحت رسام كاريكاتير حاصل على شهادة في الفيزياء ، وهل هناك سبب حاسم لتحويلها إلى وظيفة؟

Bengali:
আপনি কীভাবে পদার্থবিজ্ঞানে ডিগ্রী নিয়ে কার্টুনিস্ট হয়েছিলেন এবং এটিকে চাকরিতে পরিণত করার কোনও নিষ্পত্তিমূলক কারণ আছে কি?

Chinese:
你是如何成為一名擁有物理學學位的漫畫家的，有什麼決定性的理由把它變成一份工作嗎？

Japanese:
のようにして物理学の学位を持つ漫画家になりましたか？それを仕事に変える決定的な理由はありますか？

Czech:
Jak jste se stal karikaturistou s diplomem z fyziky a existuje nějaký rozhodující důvod, proč z toho udělat práci?

Document: aut110158-multi-lang / Article / Body / Sections / Para/Section(s) / Section / Para/Section(s) / Section / Para/Section(s) / Para / Text

Primo - Math rendering

Edit Insert Format Help

Navigation Authors Bibliography Structure

Sections Figures Tables Formulas

Head
Abstract
Highlights
Keywords
1. Introduction
2. System model
3. Statistical characteristic of VLC link and RF link
3.1. Signal transmission of VLC link
3.2. Statistical characteristic of γ_A
3.3. Signal transmission of RF link
3.4. Statistical characteristic of , and
4. Secrecy performance analysis
5. Numerical results and discussions
6. Conclusion
Declaration of Competing Interest
Acknowledgment
References

$$\begin{aligned} \gamma_A &= \frac{|h_{O,A}|^2 P_0 (w_1^2 + w_2^2)}{N_0} \\ &= \frac{|h_{O,A}|^2 P_0}{N_0} \\ &= |h_{O,A}|^2 \bar{\gamma}_0, \end{aligned} \quad (5)$$

where $\bar{\gamma}_0 = \frac{P_0}{N_0}$ is the transmission SNR of the OAP.

3.2. Statistical characteristic of γ_A

If the position of the device A obeys a uniform distribution within a circle with maximum radius r_0 (satisfying $r_0 \leq H \tan \theta_{1/2}$ to enable the device A to locate in the scope illuminated in the LED's half power angle), then the probability density function (PDF) of r can be written by $f_r(r) = 2r/r_0^2, 0 < r \leq r_0$. By solving the distribution of the random variable function [13,35,36], the PDF of γ_A is given by

$$f_{\gamma_A}(u) = \frac{\bar{\gamma}_0^{-1}}{c+3} T^{\frac{2}{c+3}} r_0^{-2} u^{-\frac{1}{c+3}-1}, \quad (6)$$

for $\min \gamma_A \leq u \leq \max \gamma_A$, where $\min \gamma_A = \frac{\bar{\gamma}_0 T^2}{(r_0^2 + H^2)^{c+3}}$ and $\max \gamma_A = \bar{\gamma}_0 T^2 H^{-2(c+3)}$.

And the cumulative distribution function (CDF) of γ_A is given by

$$\begin{aligned} F_{\gamma_A}(u) &= \int_{\min \gamma_A}^u f_{\gamma_A}(y) dy \\ &= r_0^{-2} \bar{\gamma}_0^{-\frac{c+4}{c+3}} (r_0^2 + H^2)^{-\frac{c+4}{c+3}} - r_0^{-2} \bar{\gamma}_0^{-1} T^{\frac{2}{c+3}} u^{-\frac{1}{c+3}}. \end{aligned} \quad (7)$$

Document: optics127983-withlatex / Article / Head / Author group / Collaboration, Author, Text / Author / Name

Edit Insert Format Help

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Sections Figures Tables Formulas

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$$y_A = h_{O,A} \sqrt{P_0} (w_1 s_1 + w_2 s_2) + n_0, \quad (2)$$

where $h_{O,A}$ is the gain of the optical wireless channel from the OAP to the device A; n_0 is the channel additive white Gaussian noise (AWGN) with mean 0 and variance N_0 .

The channel gain $h_{O,A}$ is given by

$$h_{O,A} = \frac{\rho B (c+1) \cos^c(\vartheta) \cos(\psi) \text{rect}(\psi/\psi_{1/2})}{2\pi(r^2 + H^2)}, \quad (3)$$

Formula

$$h_{O,A} = \frac{\rho B (c+1) \cos^c(\vartheta) \cos(\psi) \text{rect}(\psi/\psi_{1/2})}{2\pi(r^2 + H^2)},$$

```
\begin{equation}
\{h\}_{O,A} = \frac{\rho B (c+1) \operatorname{cos}^c(\vartheta) \operatorname{cos}(\psi) \operatorname{rect}(\psi / \psi_{1/2})}{2\pi (r^2 + H^2)}
\end{equation}
```

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distance between the OAP plane and the device A plane, and r is the separation distance of the device A from the projection of the OAP on the device A plane. Let $T = \rho B (c+1) H^{c+1} / (2\pi)$, then the channel gain $h_{O,A}$ can be simplified as

$$h_{O,A} = T (r^2 + H^2)^{-(c+3)/2}. \quad (4)$$

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Navigation **Authors** Bibliography Structure

Authors Affiliations Correspondences Footnotes

New

- Kevin C.A. ↑ ↓ -
- Bob B.B. ↑ ↓ -
- Stuart A.C. ↑ ↓ -
- T on behalf of ↑ ↓ -

Initials _____

Indexed name _____

Degrees (pre) _____

Given name **Kevin**

Surname **C.A.**

Name suffix _____

Alt name _____

Degrees (post) _____

Ranking _____

Roles _____

Contributor roles **Conceptualization** ↑ ↓ -

Formal analysis ↑ ↓ -

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Ranking _____

Roles _____

Contributor roles **Conceptualization** ↑ ↓ -

Formal analysis ↑ ↓ -

Investigation ↑ ↓ -

Software ↑ ↓ -

Writing - original draft ↑ ↓ -

Writing - review & editing ↑ ↓ -

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Alias **Kin**

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Navigation **Authors** Bibliography Structure

Authors **Affiliations** Correspondences Footnotes

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- b STM Document Engineering Private Limited, Mepukada, Ma ↑ ↓ -
- c Sayahna Foundation, Trivandrum, Kerala, India ↑ ↓ -

Label **a** Edit

Affiliation -

Organization **Sayahna Foundation** ↑ ↓ -

+

Address **JWA 34, Jagathy** ↑ ↓ -

+

City **Trivandrum**

State **Kerala**

Postal code **695014**

Country **India**

Generate the text from structured fields ⚠

Text **Sayahna Foundation, JWA 34, Jagathy, Trivandrum, 695014, Kerala, India**

Navigation Authors **Bibliography** Structure

New

- Bibliography References
- Section ↑ ↓ -
- Ref/Entry [1] Haas H. Wu X. Load balancing fo ↑ ↓ -
- Ref/Entry [2] Küçük K. Msongaleli D. Akbulut C ↑ ↓ -
- Ref/Entry [3] Aboagye S. Ngatched T.M.N. Do ↑ ↓ -
- Ref/Entry [4] Peng H. Li Q. Pandharipande A. C ↑ ↓ -
- Ref/Entry [5] Kong J. Ismail M. Serpedin E. Qar ↑ ↓ -
- Ref/Entry [6] Vishwakarma N. R. S. Performan ↑ ↓ -

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Authors **Titles** Hosts Info

New

- Haas H. ↑ ↓ -
- Wu X. ↑ ↓ -

Surname **Haas**

Given name **H.**

Name suffix _____

Alt name _____

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Navigation Authors **Bibliography** Structure

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Authors Titles Hosts Info New ▼

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👤 Wu X. ↑ ↓ -

Surname Haas

Given name H.

Name suffix

Alt name

Et al

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgment

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Document: optics127983-withlatex / Article / Tail / Bibliography / Bibliography section / Bib reference

- Head
- Abstract
- Highlights
- Keywords
- 1. Introduction
- 2. System model**
- 3. Statistical characteristic of VLC link and RF link
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 - 3.4. Statistical characteristic of , and
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- 5. Numerical results and discussions
- 6. Conclusion
- Declaration of Competing Interest
- Acknowledgment
- References

2. System model

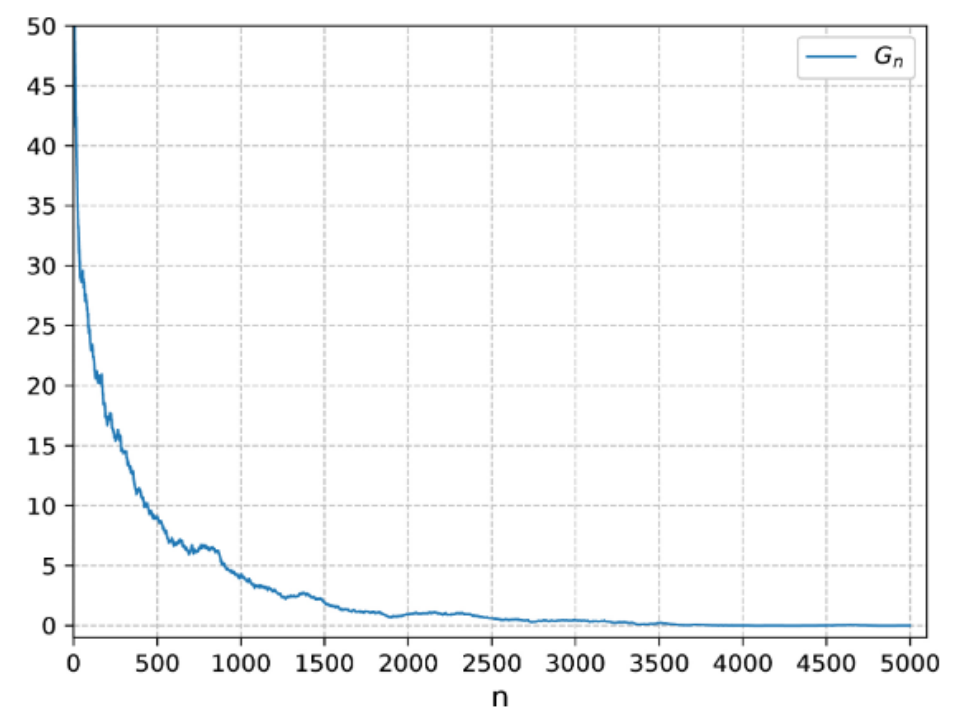
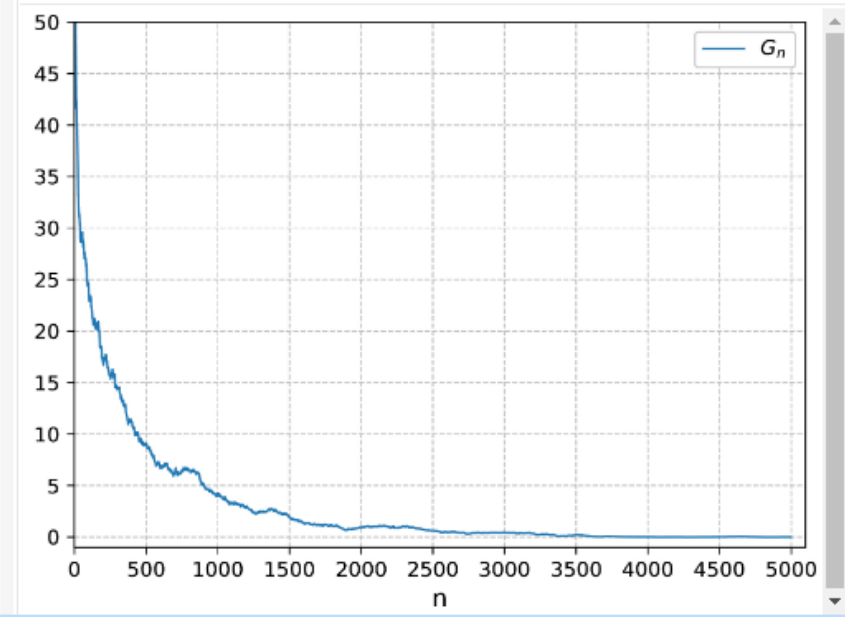


Fig. 1. Model of the RIS-aided heterogeneous VLC–RF network with two NOMA UEs working in cooperative transmission mode against an external eavesdropper.

The RIS-aided heterogeneous VLC–RF network with two NOMA

Simple Full

Locator	Type	Size	Action
gr1	IMAGE	1667×1261 (308.6 KB)	Upload
gr2	IMAGE	1667×1221 (315.3 KB)	Upload
gr3	IMAGE	1668×1274 (278.1 KB)	Upload
gr4	IMAGE	1667×1226 (303.4 KB)	Upload
gr5	IMAGE	1667×1142 (310.9 KB)	Upload
gr6	IMAGE	1667×1107 (318.2 KB)	Upload
gr7	IMAGE	1425×1469 (826.9 KB)	Upload



- Head
- Abstract
- Highlights
- Keywords
- 1. Introduction
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- References

2. System model

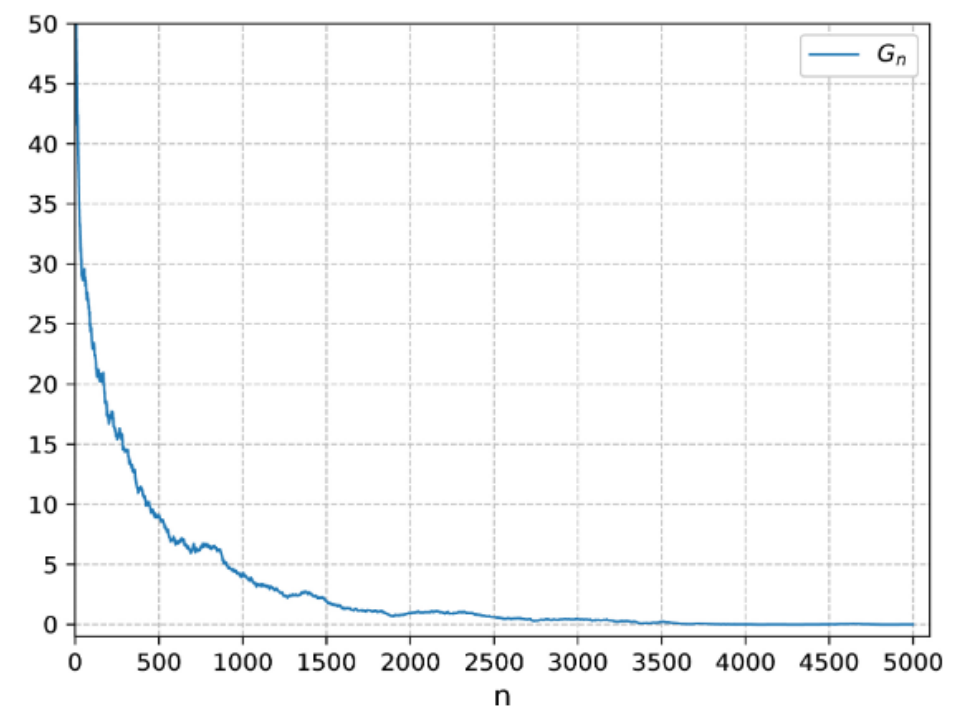
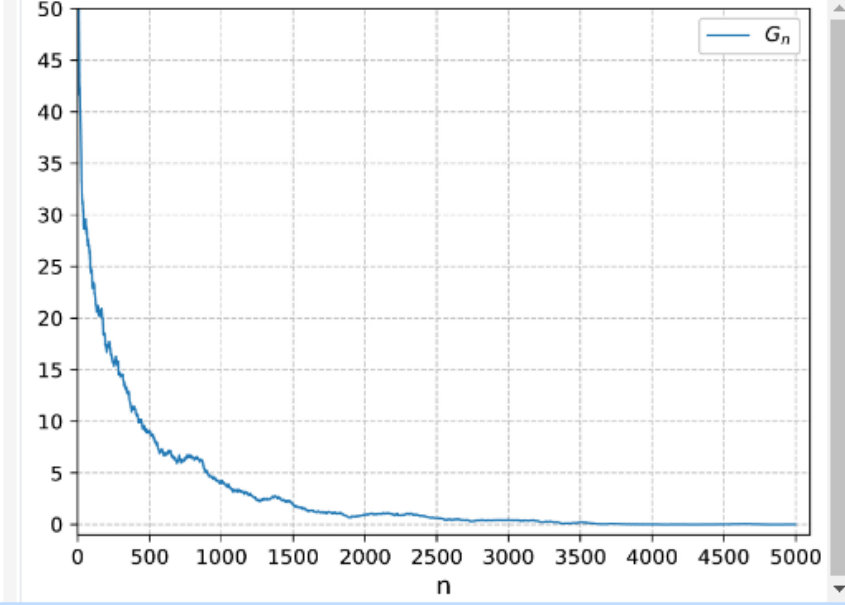


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The RIS-aided heterogeneous VLC–RF network with two NOMA

Simple Full

Locator	Ver	ID	Type	Size	Action
gr1	1*	1	IMAGE		Options
	Ver.	1*		1667×1261 (308.6 KB)	Options
			Original	1667×1261 (308.6 KB)	Options
gr2	1*	2	IMAGE		Options
	Ver.	1*		1667×1221 (315.3 KB)	Options
gr3	1*	3	IMAGE		Options
	Ver.	1*		1668×1274 (278.1 KB)	Options
gr4	1*	4	IMAGE		Options
	Ver.	1*		1667×1226 (303.4 KB)	Options
gr5	1*	5	IMAGE		Options



Screenshots of Neon

Neon XML XML Log TeX Log Compile HTML Reset Project Name: aut110158 File Uploaded Successfully. Upload Choose file aut110158.zip Submit

1 According to Theorem 2, one can directly deduce the following corollary.
2

3 **Corollary 2:** Let the conditions of Theorem 2 hold, and let $\{f_k(x)\}$ be the conditional probability
4 density function of the noise sequence as defined in Assumption 4. Then we have the following two
5 basic results for the accumulated regret of adaptive prediction:
6

- 7 • If $\{f_k(x)\}$ has a uniformly positive lower bound, i.e.
8
9
$$\inf_{|x| \leq LM+C, k \geq 0} \{f_k(x)\} > 0, \text{ a.s.} \quad (27)$$

10 then
$$\sum_{k=0}^n R_k = O(\log n), \text{ a.s.} \quad (28)$$
- If $\{f_k(x)\}$ does not have a uniformly positive lower bound but satisfies
$$\sqrt{\frac{\log k}{k}} = o\left(\inf_{|x| \leq LM+C} \{f_k(x)\}\right), \text{ a.s.} \quad (29)$$

then
$$\sum_{k=0}^n R_k = o(n), \text{ a.s.} \quad (30)$$

Remark 5: Let the noise sequence $\{v_k\}$ be independent and normally distributed with zero mean and variance $\{\sigma_k^2\}$. Then the condition (27) will be satisfied if $\{\sigma_k^2\}$ has both upper and lower positive bounds; the conditions (29) will be satisfied if $\sigma_k^2 \rightarrow 0$ and $\sigma_k^2 \log k \rightarrow \infty$.

4 of 8 160%

According to Theorem 2, one can directly deduce the following corollary.

Corollary 2. Let the conditions of Theorem 2 hold, and let $\{f_k(x)\}$ be the conditional probability density function of the noise sequence as defined in Assumption 4. Then we have the following two basic results for the accumulated regret of adaptive prediction:

- If $\{f_k(x)\}$ has a uniformly positive lower bound, i.e.
$$\inf_{|x| \leq LM+C, k \geq 0} \{f_k(x)\} > 0, \text{ a.s.} \quad (27)$$

then
$$\sum_{k=0}^n R_k = O(\log n), \text{ a.s.} \quad (28)$$
- If $\{f_k(x)\}$ does not have a uniformly positive lower bound but satisfies
$$\sqrt{\frac{\log k}{k}} = o\left(\inf_{|x| \leq LM+C} \{f_k(x)\}\right), \text{ a.s.} \quad (29)$$

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3. Proofs of the main results

To prove the main results, v

Lemma 1 (Cheney, 2001). The satisfies
$$\| \Pi_Q(x) - \Pi_Q(y) \|_Q \leq \|x - y\|_Q$$

Lemma 2 (Chen & Guo, 1991). sequence and $\{f_n, \mathcal{F}_n\}$ an adapte
$$\sup_n \mathbb{E}[|\omega_{n+1}|^\alpha | \mathcal{F}_n] < \infty \text{ a.s.}$$

for some $\alpha \in (0, 2]$, then as $n \rightarrow \infty$
$$\sum_{i=0}^n f_i \omega_{i+1} = O(s_n(\alpha) \log^{\frac{1}{\alpha} + \eta}(s_n^\alpha(\alpha)))$$

where
$$s_n(\alpha) = \left(\sum_{i=0}^n |f_i|^\alpha \right)^{\frac{1}{\alpha}}$$

Lemma 3 (Lai & Wei, 1982). Let $\mathbb{R}^p (p \geq 1)$ and let $A_n = A_0 + \sum_{i=1}^n A_i$ of A_n . Assume that A_0 is nonsing
$$\sum_{k=0}^n \frac{X_k^T A_k^{-1} X_k}{1 + X_k^T A_k^{-1} X_k} = O(\log(|A_n|))$$

Screenshots of Neon

Proof of Theorem 3: By the definitions of J_n , R_n and Eq. (32), we know that

$$\begin{aligned}
 J_n &= \frac{1}{n} \sum_{k=0}^{n-1} [y_{k+1} - y_{k+1}^*]^2 \\
 &= \frac{1}{n} \sum_{k=0}^{n-1} [y_{k+1} - \phi_k^T \hat{\theta}_k - \mathbb{E}(v_{k+1} | \mathcal{F}_k)]^2 \\
 &= \frac{1}{n} \sum_{k=0}^{n-1} R_k + \frac{1}{n} \sum_{k=0}^{n-1} [v_{k+1} - \mathbb{E}(v_{k+1} | \mathcal{F}_k)]^2 \\
 &\quad + \frac{1}{n} \sum_{k=0}^{n-1} 2 (\phi_k^T \tilde{\theta}_k) [v_{k+1} - \mathbb{E}(v_{k+1} | \mathcal{F}_k)],
 \end{aligned} \tag{63}$$

We now estimate the RHS of the above equation term by term. First, by Corollary 2 we know that the first term is bounded by $O\left(\frac{\log n}{n}\right)$. For the last two terms of (63), by Lemma 2, we have

$$\begin{aligned}
 &\sum_{k=0}^{n-1} (\phi_k^T \tilde{\theta}_k) [v_{k+1} - \mathbb{E}(v_{k+1} | \mathcal{F}_k)] \\
 &= O\left(\left\{\sum_{k=0}^{n-1} R_k\right\}^{\frac{1}{2}+\eta}\right) \\
 &= o\left(\sum_{k=0}^{n-1} R_k\right) + O(1) \quad a.s., \quad \forall \eta > 0
 \end{aligned} \tag{64}$$

Proof of Theorem 3. By the definitions of J_n , R_n and Eq. (32), we know that

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 &= \frac{1}{n} \sum_{k=0}^{n-1} R_k + \frac{1}{n} \sum_{k=0}^{n-1} [v_{k+1} - \mathbb{E}(v_{k+1} | \mathcal{F}_k)]^2 \\
 &\quad + \frac{1}{n} \sum_{k=0}^{n-1} 2 (\phi_k^T \tilde{\theta}_k) [v_{k+1} - \mathbb{E}(v_{k+1} | \mathcal{F}_k)],
 \end{aligned}$$

We now estimate the RHS of the above equation term by term. First, by Corollary 2 we know that the first term is bounded by $O\left(\frac{\log n}{n}\right)$. For the last two terms of (63), by Lemma 2, we have

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 &= O\left(\left\{\sum_{k=0}^{n-1} R_k\right\}^{\frac{1}{2}+\eta}\right) \\
 &= o\left(\sum_{k=0}^{n-1} R_k\right) + O(1) \quad a.s., \quad \forall \eta > 0
 \end{aligned}$$

Technologies behind Primo

Primo is written mostly in Scala, both server-side and client-side. The client-side is compiled using Scala-JS to JavaScript. On the server-side, Scala is compiled to Java byte-code and runs in the JVM. It can seamlessly inter-operate with existing Java libraries. The development environment is IntelliJ IDEA, the build-tool is SBT. Primo uses its own widget library called VDL, part of the Primo code base.

Primo doesn't have many external dependencies. We use following "major" libraries:

- JDK obviously
- undertow - the web-server, like tomcat, but smaller
- sqlite - for the DB
- lucene - full-text index of the documents

And some "minor" libraries:

- xpp3 - XML parser
- scala-js DOM, java-time, java-logging
- boopickle, scala-css, and some others

Any dataset size limitation?

The dataset size limit is 200MB. It is a constant, which can be changed at will.

How many articles can the platform support?

Primo can store up to 2^{60} (cca 10^{18}) documents. The limit is the disk size.

How many lines of XML data can be rendered, image sizes etc.

There is no code limit on the lines of XML, the limit will be the performance/experience in the browser. The image size limit is 20MB, again a constant in code, which can be changed.



Thank you!



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