

# Curriculum Vitae<sup>1</sup>

Keisuke Hoshino

## Contact details

Division of Mathematics and Mathematical Sciences, Faculty of Science, Kyoto University,  
Kitashirakawa Oiwake-chō, Sakyo-ku, Kyoto-shi, Kyoto 606-8502 Japan

Email 1: hosiksk215@gmail.com

Email 2: hoshinok@kurims.kyoto-u.ac.jp

Phone: +81 80-5456-5530

## Fundings

2023–2026 JSPS Research Fellowship for Young Scientists (DC1)

## Education

2023– Ph.D. course in Division of Mathematics and Mathematical Sciences, Faculty of Science, Kyoto University.

Expected completion : March 2026

Thesis title : *A Homotopy Theory of Algebraic Higher Categories*

Supervisor : Masahito Hasegawa

2021–2023 Master's course in Division of Mathematics and Mathematical Sciences, Faculty of Science, Kyoto University.

Thesis title : *Towards structures of higher dimensional categories*

Supervisor : Masahito Hasegawa

2017–2021 Undergraduate course in Faculty of Science, Kyoto University.

## Publications

- [1] S. Fujii, K. Hoshino, and Y. Maehara. “ $\omega$ -weak equivalences between weak  $\omega$ -categories”. In: *Adv. Math.* 480 (2025), Paper No. 110490. ISSN: 0001-8708,1090-2082. DOI: 10.1016/j.aim.2025.110490. URL: <https://doi.org/10.1016/j.aim.2025.110490>.
- [2] K. Hoshino and H. Nasu. “Double categories of relations relative to factorisation systems”. In: *Appl. Categ. Structures* 33.2 (2025), Paper No. 11, 70. ISSN: 0927-2852,1572-9095. DOI: 10.1007/s10485-025-09799-y. URL: <https://doi.org/10.1007/s10485-025-09799-y>.
- [3] T. Sanada, K. Hirai, K. Hoshino, and S.-y. Katsumata. “Towards a Neural Network Programming Language with Arrow Handlers Based on Reverse Differential Categories”. In: **日本ソフトウェア科学会 第42回大会講演論文集**. In Japanese. 日本ソフトウェア科学会. Sept. 2025. URL: <https://jsst.or.jp/files/user/taikai/2025/papers/1a-1-R.pdf>.
- [4] S. Fujii, K. Hoshino, and Y. Maehara. “Weakly invertible cells in a weak  $\omega$ -category”. In: *High. Struct.* 8.2 (2024), pp. 386–415. ISSN: 2209-0606. DOI: 10.21136/HS.2024.14.

## Preprints

- [1] S. Fujii, K. Hoshino, and Y. Maehara.  *$\omega$ -equifibrations between strict and weak  $\omega$ -categories*. 2025. arXiv: 2511.09849 [math.CT].

---

<sup>1</sup>Last updated: December 6, 2025

## Talks

(Invited)

- [1] K. Hoshino and H. Nasu. *Double categories of relations relative to factorisation systems*. Second Virtual Workshop on Double Categories, Online. Oct. 2024.

(non-refereed)

- [1] K. Hoshino. *Bivirtual double categories and localisation of composing cells*. Computer Science and Category Theory (CSCAT2025), Kumamoto, Japan. Mar. 2025.
- [2] K. Hoshino. *Towards Structures of Higher Dimensional Categorical Structures*. Computer Science and Category Theory (CSCAT2023), Kyoto, Japan. Mar. 2023.
- [3] K. Hoshino and H. Nasu. *Double categories of relations relative to factorisation systems*. 67th Annual Meeting of the Australian Mathematical Society (AustMS 2023), Brisbane, Australia. Dec. 2023.
- [4] K. Hoshino. *PCAs as algebras over operads*. Computer Science and Category Theory (CSCAT2022), Online. Mar. 2022.

## Teaching experiences

- 2021 Teaching assistant in Faculty of Science, Kyoto University. Tutor for KTGU Faculty Seminar (KTGU 学部セミナー) reading *Introduction to the Theory of Computation* by Sipser, Michael.
- 2022 Teaching assistant in Faculty of Science, Kyoto University. Tutor for KTGU Faculty Seminar (KTGU 学部セミナー) reading プログラム意味論 (*Program Semantics*) by Yokouchi, Hirofumi.