

# Ryo ISHIZUKA | 石塚 伶

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<https://ryo1203.github.io>

## Education

<b>Tokyo Institute of Technology</b> <i>Doctor of Science in Mathematics</i> Supervisor: Kazuma Shimomoto	<b>Tokyo, Japan</b> <i>Apr 2024–Current</i>
<b>Tokyo Institute of Technology</b> <i>Master of Science in Mathematics</i> Supervisor: Kazuma Shimomoto (2nd year), Fumiharu Kato (1st year)	<b>Tokyo, Japan</b> <i>Apr 2022–Mar 2024</i>
<b>Tokyo Institute of Technology</b> <i>Bachelor of Science in Mathematics</i> Supervisor: Fumiharu Kato	<b>Tokyo, Japan</b> <i>Apr 2018–Mar 2022</i>

## Professional Position

<b>JSPS Research Fellow (DC1)</b> <i>Tokyo Institute of Technology</i> Host Researcher: Kazuma Shimomoto	<b>Apr 2024–Mar 2027</b>
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## Research Interests

Commutative algebra in mixed characteristic (via arithmetic methods such as perfectoid rings, prismatic cohomology, and almost mathematics).

## Papers and Preprints

- [4] **R.Ishizuka** and K.Nakazato. *Prismatic Kunz’s theorem*. arXiv: 2402.06207.
- [3] D.Dine and **R.Ishizuka**. *Tilting and untilting for ideals in perfectoid rings*. Math. Z. (2024). arXiv: 2308.0960.
- [2] **R.Ishizuka**. *A calculation of the perfectoidization of semiperfectoid rings*. Nagoya Math. J. (2024). arXiv: 2305.07916.
- [1] **R.Ishizuka** and K.Shimomoto. *A mixed characteristic analogue of the perfection of rings and its almost Cohen-Macaulay property*. arXiv: 2303.13872.

## Talks

- July 2024. “Perfectoid spaces, tilts and untilts” (Survey talk), Atelier de Géométrie Arithmétique 2024, RIMS (Kyoto University), Japan
- July 2024. “Prismatic approach to a mixed characteristic Kunz’s theorem”, The 23rd Hiroshima-Sendai Workshop on Number Theory at Sendai, Tohoku University, Japan
- June 2024. “Regularity criterion of mixed characteristic rings via prismatic cohomology”, Keio Algebra Seminar, Keio University, Japan
- June 2024. “Prisms and regular local rings”, The 35th Seminar on Commutative Algebra in Japan, Tokushima University, Japan
- Apr 2024. “Prisms and its application to regular rings”, Saturday Seminar, Meiji University, Japan
- Mar 2024. “Perfectoid ideals and its correspondence”, The 20th Mathematics Conference for Young Researchers, Hokkaido University, Japan

- Feb 2024. *“Mixed characteristic Kunz’s theorem with prismatic theory”*, The 28th Conference on Algebra for Young Researchers in Japan, Waseda University, Japan
- Dec 2023. *“Commutative ring theoretic approach for the perfectoidization of semiperfectoid rings”*, Number Theory Seminar, Kyoto University, Japan
- Nov 2023. *“Ideal correspondence between a perfectoid ring and its tilt”*, The 44th Japan Symposium on Commutative Algebra, Lecture Hayama, Japan
- Aug 2023. *“Absolute integral closure”* (Survey talk), The 18th Summer School on Commutative algebra, Tokyo Institute of Technology, Japan
- Aug 2023. *“On the relation between perfectoidization and  $p$ -root closure”*, The 9th China-Japan-Korea International Conference on Ring and Module Theory, Incheon National University, Republic of Korea
- July 2023. *“On the commutative ring-theoretic structure of the perfectoidization of semiperfectoid rings”*, The 22nd Hiroshima-Sendai Workshop on Number Theory at Hiroshima, Hiroshima University, Japan
- July 2023. *“On the application of perfectoidization to commutative algebra and its structure”*, The 34th Seminar on Commutative Algebra in Japan, Kitami Institute of Technology, Japan
- May 2023. *“On Perfectoid(ization) and its commutative ring-theoretic properties”*, Ookayama Youth Seminar in Algebra, Tokyo Institute of Technology, Japan
- Mar 2023. *“A mixed characteristic analogue of the perfection of rings”*, The 11th Japan-Vietnam Joint Seminar on Commutative Algebra - by and for young mathematicians -, Vietnam Academy of Science and Technology, Vietnam
- Mar 2023. *“An explicit construction of perfectoid almost Cohen-Macaulay algebras in mixed characteristic”*, MSJ Spring Meeting 2023, Chuo University, Japan
- Mar 2023. *“An explicit construction of perfectoid almost Cohen-Macaulay algebras”*, The 19th Mathematics Conference for Young Researchers, Hokkaido University, Japan
- Oct 2022. *“An explicit construction of perfectoid almost Cohen-Macaulay algebras in mixed characteristic”*, The 43rd Japan Symposium on Commutative Algebra, Osaka University, Japan

## Membership

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- Apr 2023– . Mathematical Society in Japan (MSJ)

## Languages

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**Japanese:** Native

*Mother tongue*

**English:** Intermediate

*Can read, write, and, listen but may struggle with conversation*

**French:** Beginner

*Can only read mathematical texts*