



Tao Chen Ph.D.

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Born 28 June 1988

RESEARCH FIELD

My research field is Geometry, especially Discrete Geometric Analysis. Part of my work concentrates on the geometric structures of discrete mathematical objects and their subdivisions. The study on converging subdivision sequences of discrete surfaces shows a strong connection between discrete and continuum, which reflects the relation of micro to macroscopic in the physical world. Based on this observation, a path from Geometry to Material Science can be found. I am now trying to establish a mathematical theory to clarify how macroscopic dynamics, such as an electric current or a heat flow in materials, are controlled by their microscopic geometric structures.

WORK EXPERIENCE

2019 – **Post-doctoral Researcher**

AIST-TohokuU Mathematics for Advanced Materials Open Innovation Laboratory.

2019.01 – 2019.03 **Academic Visitor**

Mathematical Geometry Processing, Freie Universität, Berlin.

2016 – 2019 **Research Assistant**

AIST-TohokuU Mathematics for Advanced Materials Open Innovation Laboratory.

EDUCATION

2014 – 2019 **Ph.D. in Mathematics**

Mathematical Institute, Tohoku University.

- Supervisor: Prof. Kotani Motoko
- Thesis title: *Convergence of subdivision sequences of discrete surfaces.*

2011 – 2014 **M.Sc. in Mathematics**

School of Mathematics and Statistics, Beijing Institute of Technology.

- Supervisor: Prof. Sun huafei
- Thesis title: *Principal bundles over statistical manifolds.*

2007 – 2011 **B.Sc. in Mathematics**

School of Mathematics and Statistics, Beijing Institute of Technology.

AWARDS

2014 – 2019 **Japanese Government (MEXT) Scholarship**

Tohoku University recommendation.

2018 **Tohoku University Professor Fujino Incentive Award Finalist**

Mathematical Institute recommendation.

PUBLICATIONS

1. C. Tao, *A construction of converging Goldberg-Coxeter subdivisions of discrete surfaces*, Kobe Math. J. , accepted.
2. M. Kotani, H. Naito, C. Tao, *Constructions of continuum from a discrete surface by its iterated subdivisions*, Communications in Analysis and Geometry, (arXiv: 1806.03531), accepted.

PRESENTATIONS

- 2020.01.16 – **A visual introduction to Riemannian curvatures**
MathAM-OIL weekly seminar, Tohoku University.
- 2019.12.19 **A convergence theory for trivalent graphs in E^3**
MathAM-OIL the 4th Workshop, Tokyo.
- 2019.02.14 **Constructions of converging subdivisions of discrete surfaces**
Oberseminar: Geometrie und Visualisierung, Freie Universität, Berlin.
- 2018.11.13 **A construction of converging Goldberg-Coxeter subdivisions of a discrete surface**
Geometry group weekly seminar, Tohoku University.
- 2018.10.25 **Converging subdivision sequence of a discrete Surface**
Workshop: Differential Equations on manifolds, Satellite Plaza, Kanezawa University.
- 2018.08.30 **Goldberg-Coxeter subdivisions of discrete surfaces and their convergence**
the 65th Geometry Symposium, Tohoku University.
- 2017.09.13 **A convergence theory for graphs as discrete surfaces**
the Mathematical Society of Japan, Autumn Meeting 2017, Yamada University

OTHERS

Language Native Chinese speaker – Proficient in English and Japanese

REFERENCES

- Kotani Motoko ☒ Executive Vice President of Tohoku University, Professor of Mathematical Institute.
- Nakanishi Takeshi ☒ Director of MathAM-OIL, AIST-Tohoku University.
- Sun Huafei ☒ Professor of School of Mathematics and Statistics, Beijing Institute of Technology.