



# Public Lectures

# A mysterious world where mathematics and physics are one



- Celebration for the 20th UK-Japan Winter School -

Embassy of Japan in the UK

101-104 Piccadilly, Mayfair, London, W1J 7JT

## Time Schedule

17:30-17:50 Opening Remarks

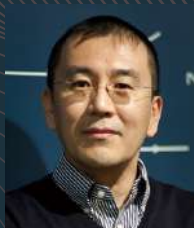
### Part 1

Professor  
**Martin Hairer**  
(Imperial College London)



17:50-18:30 1st Lecture  
"On coin tosses, atoms and forest fires"

Professor  
**Hiroshi Ooguri**  
(Caltech & Kavli IPMU)



18:30-19:10 2nd Lecture & movie  
"The Science of the Man from 9 Dimensions"

### Part 2

19:10-20:30 Individual networking session between  
Japanese and UK Universities in Mathematics

May  
**15**  
2020  
17:30-20:30



## Organizing Institutions:

Mathematical Research Centre, University of Warwick  
Department of Mathematics, Imperial College London  
Department of Mathematics, King's College London  
Department of Mathematical Sciences, Durham University  
Center for Advanced Mathematical Sciences, Keio University  
Department of Mathematics, Waseda University  
Advanced Mathematical Institute, Osaka City University  
Kavli IPMU, The University of Tokyo  
Mathematical Institute, Tohoku University  
Graduate School of Information Science, Tohoku University  
Advanced Institute of Material Research, Tohoku University

## In association with:

The College of Richard Collyer  
Rikkyo School in England

## Registration

Programme & Application website:  
[www.tfc.tohoku.ac.jp/other-activity/7081.html](http://www.tfc.tohoku.ac.jp/other-activity/7081.html)

Deadline: April 30, 2020



Please bring your ID as well as a copy of the flyer for this event. A flyer will be needed to demonstrate your intent to participate in this activity. You can download the flyer from the following link. Please be sure to print it out.

**Contact Us:** [tfc\\_ukj2020@ml.tohoku.ac.jp](mailto:tfc_ukj2020@ml.tohoku.ac.jp)

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Embassy of Japan in the UK  
The Tokyo Club  
Daiwa Anglo-Japan Foundation  
Tohoku Forum for Creativity, Tohoku University



# Programme

[プログラム]

## Public Lectures

A mysterious world where mathematics and physics are one - Celebration for the 20th UK-Japan Winter School -

### Time Schedule

17:30-17:50 Opening Remarks

#### ■ Part 1



Professor  
**マルティン・ハイラー**  
Martin Hairer  
(Imperial College London)

17:50-18:30 1st Lecture  
"On coin tosses, atoms and forest fires"  
「コイントス、原子と森林火災」

#### Abstract:

We will encounter some of the mathematical objects arising naturally in probability theory, as well as some of their surprising properties. In particular, we will see how one of these objects was involved in the confirmation of the existence of atoms over 100 years ago and how new properties of related objects are still being discovered today.

驚くべき現象が数学として理解されることがよくあります。この講演では、確率の中起こる不思議な性質についてお話しをしたいと思います。その例としていかに100年以上前に存在した原子を確認することができるのか、またそれに関連した数学的性質が今でも発見されることについてもお話しをしたいと思います。

#### Profile:

Sir Martin Hairer KBE FRS is a professor of mathematics and currently holds a chair in probability and stochastic analysis at Imperial College London. Hairer works in probability theory, including stochastic dynamics and stochastic partial differential equations. He is a Fellow of the Royal Society, of the American Mathematical Society, of the Academy of Sciences Leopoldina, and of the Austrian Academy of Sciences. His work was distinguished with a number of prizes, most notably the Fermat prize and a Fields Medal.

勲爵士マルティン・ハイラー KBE FRS 氏は世界トップレベルの数学者。専門は確率論。現在はインペリアル・カレッジ・ロンドンで確率論・確率解析部門の主任教授。王立協会、米国数学会、国立科学アカデミー・レオポルディーナ、オーストリア科学アカデミーのフェロー。フェルマー賞、フィールズ賞等、多くの賞を受賞している。



Professor  
**大栗 博司**  
Hirosi Ooguri  
(Caltech & Kavli IPMU)

18:30-19:10 2nd Lecture & movie  
"The Science of the Man from 9 dimensions"  
「9次元から来た男とは何者か?」

#### Abstract:

"The Man from the 9 Dimensions" is a science movie on Superstring Theory, the leading candidate for the unified theory of forces and matters, including gravity. Professor Ooguri will explain the science behind the movie, which takes us from the microscopic world of elementary particles to the macroscopic world of the universe, and to its beginning - the Big Bang.

「9次元から来た男」は、自然界のすべての物質やその間に働く力をすべて説明しようとする統一理論の最も有望な候補である超弦理論を解説する映像作品です。そこに描かれたミクロな素粒子の世界からマクロな宇宙の世界、その始まりのビッグバンの科学的内容を解説したのちに、映画をご覧ください。

#### Profile:

Professor Hirosi Ooguri is a Japanese physicist, the Fred Kavli Professor for Theoretical Physics and Mathematics and the Director of the Walter Burke Institute for Theoretical Physics at California Institute of Technology, and the Director of the Kavli Institute for the Physics and Mathematics of the Universe at the University of Tokyo. He received a Medal of Honor with Purple Ribbon from the Emperor of Japan and the Eisenbud Prize from the American Mathematical Society. He is a Fellow of the American Academy of Arts and Sciences.

日本国籍の物理学者。カリフォルニア工科大学フレッド・カブリ冠教授およびウォルター・バーク理論物理学研究所所長。東京大学カブリ数物連携宇宙研究機構機構長。専門は素粒子論。紫綬褒章受章。アメリカ数学会アイゼンバッド賞受賞。アメリカ芸術科学アカデミー会員。

#### ■ Part 2

19:10-20:30 Individual networking session between Japanese and UK universities in Mathematics