

# SCIENTIFIC PROGRAM

*(Opening day of IMS new premise)*

**12TH FEBRUARY 2025, WEDNESDAY**

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Session Chair: Professor ZHU Chengbo

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2.30 pm                      Professor SHEN Zuowei, NUS  
*Mathematics in Data Science*

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3.30 pm                      *Break*

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4.00 pm                      Professor GAN Wee Teck, NUS  
*The Local Langlands Correspondence*

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Register here: <https://forms.office.com/r/AB3R1SPBrc>



## ABSTRACTS

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### **Mathematics in Data Science**

*Professor Zuowei SHEN, NUS*

We are living in the era of big data, where extracting, interpreting, and applying the vast knowledge embedded in data can greatly benefit society and improve daily life. However, the sheer complexity of collected data, coupled with high expectations—particularly in fields like artificial intelligence—presents both significant challenges and promising opportunities, especially for mathematical sciences.

In this talk, we will explore concrete examples in data science and AI, drawing from the speaker's research on the mathematical foundations of data science and its applications in image and video processing. We will demonstrate how mathematics has played a critical role in advancing data science and discuss how it can drive future innovations. Additionally, we will highlight key challenges mathematicians face in this rapidly evolving, data-driven landscape.

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### **The Local Langlands Correspondence**

*Professor Wee Teck GAN, NUS*

In 2009, I gave a job talk at NUS Math, speaking on my then-recently-obtained proof of the local Langlands conjecture (LLC) for the symplectic group  $\mathrm{GSp}(4)$ . During the questions session after the talk, Prof. Louis Chen asked if there is any prospect of proving it for all groups, or should one expect to prove the LLC one group at a time. 16 years on, I will try to address this question in this talk. In particular, I will describe the problem to be addressed, give some historical background and discuss the current state of affairs.

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