

# The ubiquitous hyperfinite $\text{II}_1$ factor

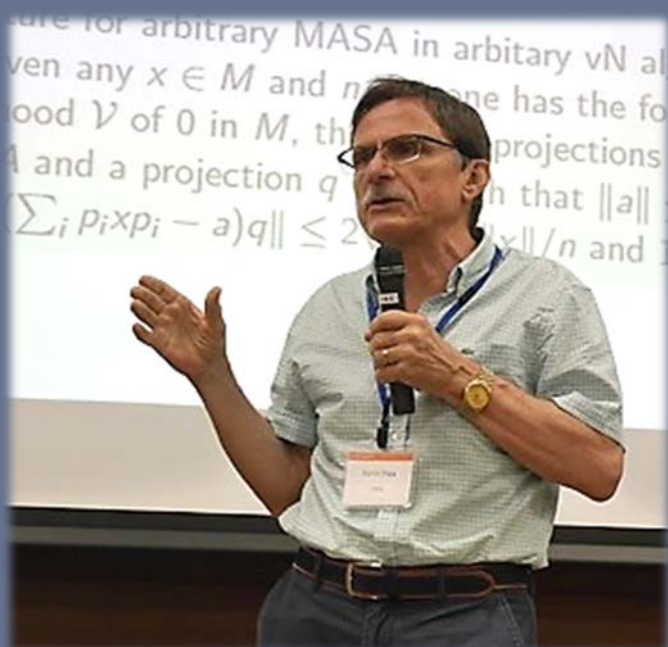
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Monday, April 8	15:00 - 17:00
Tuesday, April 9	15:00 - 17:00
Wednesday, April 10	13:00 - 15:00
Thursday, April 11	15:00 - 17:00
Friday, April 12	15:00 - 17:00

110 Seminar Room  
Faculty of Science Bldg. #3  
Kyoto University



The hyperfinite  $\text{II}_1$  factor  $R$  has played a central role in operator algebras ever since Murray and von Neumann introduced it, some 75 years ago. It is the unique amenable  $\text{II}_1$  factor (Connes 1976), and in some sense the smallest, as it can be embedded in multiple ways in any other  $\text{II}_1$  factor  $M$ . Many problems in operator algebras could be solved by constructing “ergodic” such embeddings  $R \hookrightarrow M$ . I will revisit such results and applications, through a new perspective, which emphasizes the decomposition  $M$  as a Hilbert bimodule over  $R$ . I will prove that any  $\text{II}_1$  factor  $M$  admits *coarse embeddings of  $R$* , where the orthocomplement of  $R$  in  $M$  is a multiple of  $L^2(R) \overline{\otimes} L^2(R^{op})$ . I will also prove that in certain situations,  $M$  admits *tight embeddings of  $R$* . Finally, I will revisit some well known open problems, and propose some new ones, through this perspective.

本講義は「スーパーグローバルコース数学特別講義1」として、大学院の学生には1単位認定されます。

