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A. 研究概要

Jones の基礎構成を繰り返すことによって深さ有限の II_1 型部分因子環を生み出すような有限次元 C^* 環の commuting square の特徴づけを，森田同値なユニタリ・フュージョン圏の言葉を用いて与えた．この種の commuting square は佐藤によって研究されたもので，彼の構成をわずかに一般化したものが完全に一般的なそのような commuting square を与えていることを示した．さらにその応用として，与えられた深さ有限の超有限 II_1 型部分因子環を生み出すような有限次元 C^* 環の commuting square の特徴づけも与えた．

We give a characterization of a finite-dimensional commuting square of C^*-algebras with a normalized trace that produces a hyperfinite type II_1 subfactor of finite index and finite depth in terms of Morita equivalent unitary fusion categories. This type of commuting squares were studied by N. Sato, and we show that a slight generalization of his construction covers the fully general case of such commuting squares. We also give a characterization of such a commuting square that produces a given hyperfinite type II_1 subfactor of finite index and finite depth.

B. 発表論文

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D. 講義

1. 数理科学の研究フロンティア：宇宙, 物質, 生命, 情報：理研の若手研究者によるオムニバス講義のコーディネート. (教養学部 1,2 年生講義)

2. 解析学 XD・スペクトル理論：有界とは限らない自己共役作用素のスペクトル分解. (数理大学院・4 年生共通講義)

E. 修士・博士論文

1. (論文博士) 山下 真由子 (YAMASHITA Mayuko): Differential models for the Anderson dual to bordism theories and invertible QFT's

2. (修士) 帥 博為 (SUI Hakui): The Universal Coefficient Theorem and The Elliott Program for Unital Separable Nuclear C^*-algebras

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F. 対外研究サービス

1. *Communications in Mathematical Physics* の editor.

2. *International Journal of Mathematics* の chief editor.

3. *Japanese Journal of Mathematics* の managing editor.

4. *Journal of Mathematical Physics* の associate editor.

5. *Journal of Mathematical Sciences, the University of Tokyo* の editor-in-chief.

6. *Journal of Topology and Analysis* の editor.

7. *Letters in Mathematical Physics* の editor.

8. *Reviews in Mathematical Physics* の associate editor.

9. Mathematical Physics Studies (Springer) の editor.

10. 京都大学数理解析研究所プロジェクト研究 "Operator Algebras and their Applications" の (2021 年 4 月 1 日–2022 年 3 月 31 日) オーガナイザー

11. サマースクール数理物理「機械学習の数理」(東京大学大学院数理科学研究科, オンライン, 2020 年 1 月 27–29 日) のオーガナイザー.

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13. 「物質のトポロジカル相の理論的探究」(東京大学大学院数理科学研究科, オンライン, 2022 年 2 月 22–25 日) のオーガナイザー.