(Professor)
(KAWAHIGASHI Yasuyuki)

A.

Drinfel$'d$

braiding,
Ocneanu tube   tube

α-induction
Drinfel$'d$

We established a correspondence among simple objects of the relative commutant of a full fusion subcategory in a larger fusion category in the sense of Drinfel$'$d, irreducible half-braidings of objects in the larger fusion category with respect to the fusion subcategory, and minimal central projections in the relative tube algebra generalizing Ocneanu's tube algebra. Based on this, we explicitly compute certain relative Drinfel$'$d commutants of fusion categories arising from α-induction for braided subfactors. We also presented examples arising from chiral conformal field theory.

B.

1. Y. Kawahigashi, Y. Ogata, E. Størmer: "Normal states of type III factors", Pac. J. Math. **267** (2014), 131–139.

2. M. Bischoff, Y. Kawahigashi, R. Longo, K.-H. Rehren, "Phase boundaries in algebraic conformal QFT", Commun. Math. Phys. **342** (2016), 1–45.

3. M. Bischoff, Y. Kawahigashi, R. Longo, K.-H. Rehren, "Tensor categories and endomorphisms of von Neumann algebras (with applications to Quantum Field Theory)", SpringerBriefs in Mathematical Physics Vol. **3**, 2015.

4. M. Bischoff, Y. Kwahigashi, R. Longo, "Characterization of 2D rational local conformal nets and its boundary conditions: the maximal case", Doc. Math. **20** (2015), 1137–1184.

5. S. Carpi, Y. Kawahigashi, R. Longo, M. Weiner, "From vertex operator algebras to conformal nets and back", to appear in Mem. Amer. Math. Soc.

6. Y. Kawahigashi, "Conformal field theory, tensor categories and operator algebras", J. Phys. A **48** (2015), 303001 (57 pages).

7. Y. Kawahigashi, "A remark on gapped domain walls between topological phases", Lett. Math. Phys. **105** (2015), 893–899.

8. Y. Kawahigashi, "A relative tensor product of subfactors over a modular tensor category", Lett. Math. Phys. **107** (2017), 1963-1970.

9. Y. Kawahigashi, The relative Drinfeld commutant of a fusion category and α-induction, to appear in Internat. Math. Res. Notices.

10. Y. Kawahigashi, Conformal field theory, vertex operator algebras and operator algebras, to appear in Proceedings of ICM 2018.

C.

1. A relative tensor product of rational full conformal field theories, Seminar, Isaac Newton Institute for Mathematical Sciences (U.K.), March 2017.

2. Lectures on von Neumann algebras, Lecture series (four talks), Center de Recerca Mathemàtica (Spain), May 2017.

3. Moonshine and operator algebras, Seminar, Center de Recerca Mathemàtica (Spain), May 2017.

4. The relative Drinfeld commutant and α-induction, Subfactors, K-theory and conformal field theory, Isaac Newton Institute for Mathematical Sciences (U.K.), June 2017.

5. Conformal field theory, operator algebras and vertex operator algebras, Advances in Mathematics and Theoretical Physics, Rome (Italy), September 2017.

6. From vertex operator algebras to operator algebras and back, Seminar, Harvard University (U.S.A.), October 2017.

7. From vertex operator algebras to conformal nets and back, Seminar, MIT (U.S.A.), October 2017.

8. Conformal field theory and operator algebras, Reflection Positivity, Oberwolfach (Germany), November 2017.

9. Moonshine, conformal field theory and operator algebras, East Asian Core Doctoral Forum on Mathematics 2018, Tsinghua University (China), Janury 2018.

10. Topological phases of matter, modular tensor categories and gapped domain walls (3 talks),

　　　　　　, January 2018.

D. 　　(　　　　　　　　　　　　　)

 1.
　　　　　　(　　　　　　　)

E. 　　　　　　(
　　)

 1. (　) 　　　(HE Zhuofeng) Actions on noncommutative tori and classification of the crossed products

 2. (　) 　　　(IKEDA Yasushi) Tomita's Theorem in Tomita-Takesaki Theory

 3. (　) 　　　　　(OSAWA Rinsei) Amenability and group C*-algebras

 4. (　) 　　　　(OTA Koichi) Kasparov's KK-Theory — The Operator Bifunctor Including K-Theory and C^*-Extensions

 5. (　) 　　　(MORI Michiya) Tingley's problem through the facial structure of operator algebras

F.

 1. *Communications in Mathematical Physics* editor.

2. *International Journal of Mathematics* editor.

3. *Japanese Journal of Mathematics* managing editor.

4. *Journal of Mathematical Physics* associate editor.

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

6. *Reviews in Mathematical Physics* associate editor.

7. Mathematical Physics Studies (Springer) editor.

8. 　　　　　19　　　　　　　(
　　2017　7　8,9　)

9.
　　　(
2017　8　25–27　)

10. 　　　　　20　　　　　　　(
　　2017　11　4　)

11. East Asian Core Doctoral Forum on Mathematics (Tsinghua University, China, January 12-16, 2018)

12. Noncommutative Geometry and K-theory at Rits –The Fourth China-Japan Conference– (　　　　　2018　3　26-28　)