

二国間交流事業 セミナー報告書

令和5年4月30日

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1. 事業名 相手国: オランダ (振興会対応機関: NWO) とのセミナー

2. セミナー名

(和文) トポロジカル物理に関する指数理論と作用素環論

(英文) Index Theory and Operator Algebras in Topological Physics

3. 開催期間 2023年3月1日～2023年3月3日 (3 日間)

4. 開催地(都市名)

仙台市 (Sendai)

5. 相手国側代表者(所属機関名・職名・氏名【全て英文】)

Leiden University, Assistant Professor, Bram Mesland6. 委託費総額(返還額を除く) 167,123 円

7. セミナー参加者数(代表者を含む)

	参加者数	うち、本委託費で渡航費または 日本滞在費を負担した場合*
日本側参加者等	29 名	0 名
相手国側参加者等	10 名	0 名

参加者リスト(様式B2)の合計人数を記入してください。該当がない箇所は「0」または「-」を記入してください。

* 日本開催の場合は相手国側参加者等の日本での滞在費等を負担した場合、相手国開催の場合は日本側参加者等の渡航費を委託費で負担した場合に記入してください。

8. セミナーの概要・成果等

- (1) セミナー概要(セミナーの目的・実施状況。第三国からの参加者(基調・招待講演者等)が含まれる場合はその役割とセミナーへの効果を記載してください。関連行事(レセプション、見学(エクスカーション)その他会合(別経費の場合はその旨を明記。))などがあれば、それも記載してください。各費目における増減が委託費総額の50%に相当する額を超える変更があった場合には、その変更理由と費目の内訳を変更しても計画の遂行に支障がないと考えた理由を記載してください。)

Due to the corona virus pandemic, the joint seminar was subject to many delays. The availability of speakers also changed, causing some changes to the original plan. The seminar was held in a hybrid format with an in-person event in Sendai for domestic researchers. Researchers from The Netherlands participated via ZOOM. Because the availability of speakers changed and the Dutch researchers were not able to come to Japan, over 50% of the granted funds from the NWO and JSPS were not able to be used. Despite these barriers, the seminar was a successful event and provided an opportunity for new connections between researchers in Japan and The Netherlands.

- (2) 学術的価値(セミナーにより得られた新たな知見や概念の展開等、学術的成果)

Various methods and applications of operator algebras and index theory were presented. Both speakers and participants were able to see and appreciate the breadth of these fields. Through discussions with speakers and participants, common structures and links of index theory and operator algebras in vastly different areas were considered. For example, similar index theory methods applied in both low-energy and high-energy quantum physics. These connections provide an interesting springboard for further research and correspondence between participants and speakers in both countries.

- (3) 相手国との交流(両国の研究者が協力してセミナーを開催することによって得られた成果)

Because of the hybrid nature of the seminar, the interactions and cultural exchange between Japanese and Dutch researchers was more limited than originally planned. However, through the seminar's presentations and discussion sessions, researchers in both countries obtained a much deeper understanding of the other's respective work and common links were found. We hope that these links will be the seeds for future interactions and collaborations between Dutch and Japanese researchers.

- (4) 社会的貢献(社会の基盤となる文化の継承と発展、社会生活の質の改善、現代的諸問題の克服と解決に資する等の社会的貢献はどのようにあったか)

The seminar was centered around pure mathematics and mathematical physics. In addition to enhanced academic exchange between Japan and The Netherlands, the main social contributions are the education of young researchers and valuable exposure of Japanese graduate students and postdocs to international research environments.

(5) 若手研究者養成への貢献(若手研究者養成への取組、成果)

Four postdoctoral researchers and three graduate students had the opportunity to give a presentation at the seminar, giving them valuable experience in presenting in an international environment in English. Furthermore, several graduate students and young researchers participated in the workshop, giving them opportunities to make new connections with other researchers in Japan and The Netherlands.

(6) 将来発展可能性(本事業を実施したことにより、今後どのような発展の可能性が認められるか)

There were many intriguing connections between the presentations of M. S. Adamo (Japan) and F. Arici (Netherlands) as well as the presentation of D. Takata (Japan) with previous work by P. Hochs (Netherlands). This has laid the basis for future discussions and collaborations between these researchers. The organisers were largely satisfied with the seminar and believe there is a strong foundation to further develop research connections between Japan and The Netherlands in index theory, operator algebras and applications. Future joint projects such as bilateral programs are also being considered by the organisers in consultation with the seminar participants.

(7) その他(上記(2)～(6) 以外に得られた成果(論文発表等含む)があれば記載してください)