

二国間交流事業 共同研究報告書

令和5年4月28日

独立行政法人日本学術振興会理事長 殿

[日本側代表者所属機関・部局]
 東京大学・大学院数理科学研究科
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 JPJSBP 120213206

1. 事業名 相手国: フランス (振興会対応機関: MEAE-MESRI) との共同研究

2. 研究課題名

(和文) 代数的理論およびアディック空間論を用いたモチヴィックホモトピー理論の新展開

(英文) New adic and algebraic directions in motivic homotopy theory

3. 共同研究実施期間 2021年4月1日 ~ 2023年3月31日 (2年__ヶ月)

【延長前】 __年 __月 __日 ~ __年 __月 __日 (__年__ヶ月)

4. 相手国側代表者(所属機関名・職名・氏名【全て英文】)

University Sorbonne Paris Nord ・ Assistant professor ・
 De Clercq Charles

5. 委託費総額(返還額を除く)

本事業により執行した委託費総額		811,951 円
内訳	1年度目執行経費	- 円
	2年度目執行経費	811,951 円
	3年度目執行経費	- 円

6. 共同研究実施期間を通じた参加者数(代表者を含む)

日本側参加者等	8名
相手国側参加者等	8名

* 参加者リスト(様式 B1(1))に表示される合計数を転記してください(途中で不参加となった方も含め、全ての期間で参加した通算の参加者数となります)。

7. 派遣・受入実績

	派遣		受入
	相手国	第三国	
1年度目	0	0	(0)
2年度目	1	0	1(0)
3年度目			()

* 派遣・受入実績(様式 B1(3))に表示される合計数を転記してください。

派遣:委託費を使用した日本側参加者等の相手国及び相手国以外への渡航実績(延べ人数)。
受入:相手国側参加者等の来日実績(延べ人数)。カッコ内は委託費で滞在費等を負担した内数。

8. 研究交流の概要・成果等

(1)研究交流概要(全期間を通じた研究交流の目的・実施状況)

The objectives of the research exchange were knowledge exchange between researchers, to promote the careers of young researchers, to find new connections between areas that are not necessarily in contact with each other and encourage international cooperation. Despite the COVID pandemic, most of these objectives were achieved to some extent.

Online meetings were held in February and March 2022 where participating researchers, particularly graduate students, presented their work. In April / May 2022 Kelly was able to visit Paris and discuss with participating researchers Morrow as well as De Clercq. Finally, De Clercq was able to visit Tokyo in March 2023 where he presented a talk and discussed with Miyazaki and Kelly.

(2)学術的価値(本研究交流により得られた新たな知見や概念の展開等、学術的成果)

During the 2022 online meetings it was noticed that an ad hoc technique that De Clercq was using is in fact a technique well known to homological algebraists. This is currently being explored and will likely lead to a paper. In discussions with Morrow it was observed that a new cohomology theory that he is constructing is likely the sheafification of a classical theory with respect to a topology in development by Kelly and Shuji Saito. This will also likely lead to a paper.

(3)相手国との交流(両国の研究者が協力して学術交流することによって得られた成果)

Interaction was severely hampered due to the COVID pandemic, and so there are no concrete results yet per se, but the two avenues mentioned about in item (2) seem very promising, and likely to lead to concrete results.

(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)

Pure mathematics research, which focuses on the exploration and development of abstract mathematical concepts and theories, rarely has immediate practical applications. However, it has numerous social contributions such as fostering scientific and technological advancement, enhancing critical thinking skills, promoting creativity and innovation, contributing to economic development, and enriching cultural heritage. Concretely, during the online meetings in 2022, graduate students in Japan were exposed to international standards and conventions.

(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)

Unfortunately, due to the COVID pandemic young researchers were denied the opportunity to travel to Europe and experience the research culture there firsthand, however, during the online meetings in 2022, young researchers were provided with a forum to promote their own results, and discuss them with senior internationally established researchers, both in Japan and in Europe.

(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)

As mentioned above, a connection between classical homological algebra techniques and the study of motives of projective homogeneous varieties was discovered. Additionally, a connection between a new topology under development in Japan and a new cohomology theory under development in France was discovered. Both are expected to lead to papers.

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

例:大学間協定の締結、他事業への展開、受賞など