

様式 A-1
(FY2023)

令和5年 5月 17日

サイエンス・ダイアログ 実施報告書

1. 学校名・実施責任者氏名: 千葉県立佐倉高等学校 ・ 浅野 裕史
2. 講師氏名: Sofia K. BERGMAN
3. 講義補助者氏名: 吉田 恵実子 様
4. 実施日時: 令和5年 5月 16日 (火) 14:00~15:40
5. 参加生徒: 1年生 38人、 2年生 40人、 3年生 37人 (合計 115人)
備考: 理数科の生徒(講義に参加したのは2年生、1年生と3年生は他会場でオンライン視聴)
6. 講義題目: Title: Comets and what they can say about the formation of the Solar System

7. 講義概要:

My name is Sofia Bergman and I am a scientist in the field of space physics. I am originally from Sweden, but is currently spending one year as a postdoctoral researcher at the University of Tokyo. In this lecture, I will talk about my journey to becoming a researcher and why I think space physics is such a fascinating subject. I will also talk about my home country: a cold place with lots of snow and aurora.

In my research, I study comets. The sight of a comet and its long tail in the night sky has fascinated humans for thousands of years, and still today we are wondering about their nature. Comets are interesting objects as they are believed to be remnants from the creation of the Solar System, and studying them might help us understand how planetary systems are formed. With the development of space technology, we now have the chance to visit comets with spacecraft and study them in detail.

In my work, I am focusing on space plasma, the fourth state of matter. As 99% of the universe is in the form of plasma, studying this matter is crucial in order for us to understand the world around us. Comets are surrounded by a big cloud of plasma, which makes them great for studying plasma physics. In this lecture, I will talk about what comets are and why we want to study them. I will also introduce space plasma and explain why comets can act as excellent plasma laboratories.

8. 講義形式:

対面 ・ オンライン (どちらか選択ください。)

1) 講義時間 90分 質疑応答時間 15分

2) 講義方法 (例: プロジェクター使用による講義、実験・実習の有無など)

プロジェクター使用による講義

3) 事前学習

・ 無 (どちらかに○をしてください。)

使用教材 講師の方が所属する研究室のウェブページ

9. その他特筆すべき事項:

講師の方が話のスピードをゆっくりして下さったこと、多くの写真や図を交えて解説して下さったことにより、大変わかりやすかった。講義の途中で、クイズ形式で全生徒(2年生)が参加できる活動が入ったり、質問を受け付ける時間がこまめに入ったりしたので、生徒は話に集中しやすかった。

今回は講義補助者の方が、話のまとめりに難しい専門用語の補足説明を程よく入れて下さった。サイエンス・ダイアログの趣旨からは外れてしまうのかもしれないが、この補足のおかげで内容が理解できたため、次の話題の英語に集中できた面もあった。

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Form B-2
(FY2023)
Must be typed

Date (日付)
19/05/2023 (Date/Month/Year: 日/月/年)

Activity Report -Science Dialogue Program-
(サイエンス・ダイアログ事業 実施報告書)

- Fellow's name (講師氏名): Sofia Bergman (ID No. P22723)

- Name and title of the accompanying person (講義補助者の職・氏名)

Ms. Emiko Yoshida

- Participating school (学校名): Chiba Prefectural Sakura High School

- Date (実施日時): 16/05/2023 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目):

Comets and what they can say about the formation of the Solar System

- Lecture format (講義形式):

◆ Onsite ・ Online (Please choose one.)(対面 ・ オンライン)((どちらか選択ください。))

◆ Lecture time (講義時間) ~70 min (分), Q&A time (質疑応答時間) ~20 min (分)

◆ Lecture style (ex.: used projector, conducted experiments)

(講義方法 (例: プロジェクター使用による講義、実験・実習の有無など))

Projector, quiz with questions for the students

- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.

In the first part of the lecture, I was talking about my home country, Sweden, and my background and journey to becoming a researcher. I spent some time talking about my MSc and PhD studies, which I did in the very north of Sweden in a town located north of the arctic circle. This place is very cold with a lot of snow, and you can observe special phenomena such as aurora, the midnight sun and the polar night. I showed a lot of photos in this part of the lecture.

In the second part of the lecture I was talking about my research topic: space plasma around comets. Comets are small icy objects which are mainly known for their extensive atmospheres and characteristic tails. Occasionally this large atmosphere can make them visible by the naked eye from Earth. Comets are interesting objects as they are believed to be remnants from the creation of the Solar System, and studying them might help us understand how planetary systems are formed. With the development of space technology, we now have the chance to visit comets with spacecraft and study them in detail. In the lecture, I spoke about what comets are and why

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we want to study them, and also mentioned a few space missions which have been sent to comets. I also introduced space plasma, which is the main focus of my research. Plasma is the fourth state of matter. As 99% of the ordinary matter in the universe is in the form of plasma, studying plasma is crucial in order for us to understand the world around us. Comets are surrounded by a big cloud of plasma, which makes them great for studying plasma physics.

Throughout the lecture, I asked the students a few quiz questions, which they answered by holding up post-it notes of different colors. I also had Q&A sessions after each part of the lecture where the students asked questions.

◆Other noteworthy information (その他特筆すべき事項):

- Impressions and comments from the accompanying person (講義補助者の方から、本事業に対する意見・感想等がありましたら、お願いいたします.):

She was a great role model for the students. The story of her life from her school days till the post-doc position evoke sympathy from the students and show one way as a science researcher.

Also, she gave a detailed but easy to understand explanations about her specialty on plasma science, and many students asked questions.

Quiz!

Which of the following objects has the largest magnetosphere?

- Blue Comet Halley close to the Sun
- Yellow Venus
- Pink Earth

