

様式 A-1  
(FY2023)

2024 年 2 月 10 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: 和歌山県立向陽高等学校 松下 愉久
2. 講師氏名: Ivan SELEZNOV
3. 講義補助者氏名: 井実ジャーナ真理子
4. 実施日時: 2024 年 2 月 8 日 (木) 14 : 10 ~ 15 : 30
5. 参加生徒: 2 年生 112 人、 3 年生 人、 4 年生 人 (合計 112 人)  
備考: (例: 理数科の生徒) 普通科理系
6. 講義題目: Fractal dimension
7. 講義概要: 自己紹介、ウクライナの文化と歴史、フラクタルと次元について、フラクタルの自然科学への応用について(地震、心臓拍動など)
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 60 分 質疑応答時間 20 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  
☒ 有 ・ ☐ 無 (どちらかに○をしてください。)  
使用教材 先生が送ってくれたキーワードおよび英文
9. その他特筆すべき事項:  
非常に意欲的で、相互に交流しようとする意志がとても強い先生でした。また、数え切れないほどの工夫も施して下さいました。次回も本校にぜひとも来て欲しいです。講義補助者も意欲的に説明や質問の補助をして下さり、大変感謝しております。

Form B-2  
(FY2023)  
Must be typed

Date (日付)  
22.02.2024 (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): Ivan Seleznov (ID No. 22F22376 )

- Name and title of the accompanying person (講義補助者の職・氏名)  
マリコ ジャーナ イジツ, 博士前期課程2年, 大阪大学大学院 基礎工学研究科 機能創成専攻

- Participating school (学校名): Wakayama Prefectural Koyo High School

- Date (実施日時): 08.02.2024 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目):  
Fractal dimension. Research talk

- 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)          min (分), Q&A time (質疑応答時間)          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))

used projector

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

The lecture began with a comprehensive self-presentation, allowing the audience to get acquainted with the speaker's background, interests, and expertise. Following the self-introduction, the speaker shared their hobby, providing a personal touch to the presentation.

Transitioning into the core topic, the lecture delved into the rich history and culture of Ukraine, encompassing its geography, historical milestones, and cultural heritage. This served as a foundational backdrop for understanding the broader context of the discussion.

The spotlight then shifted to the research presentation, which centered on fractal scaling—a captivating exploration of fractals and their applications. Fractals, as described, are intriguing geometric shapes characterized by self-similarity at different scales. Through captivating examples like the Mandelbrot set and snowflake patterns, the audience gained insight into the visual allure of fractals and their relevance in diverse fields such as computer graphics.

However, the lecture emphasized that fractals extend beyond mere visual aesthetics. They serve a crucial role in analyzing time series data, revealing hidden patterns amidst apparent chaos. This aspect was highlighted through the discussion of the coastline paradox, the Koch curve, and fractal dimension—a deeper dive into the mathematical underpinnings of fractal geometry.

Moreover, the research presentation touched upon real-life applications of fractals, illustrating how they help in making sense of complex systems and phenomena, such as the Tohoku earthquake. This connection between fractals and real-world events underscored the practical significance of fractal scaling in understanding and navigating the complexities of our environment.

◆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。）:

As the person providing translation for the lecture, I found it to be both engaging and informative. The speaker's expertise in fractal scaling was clear, and Ivan did a great job explaining complex concepts in an easy-to-understand way. I particularly appreciated how he included cultural references, which made the lecture more relatable and interesting for everyone. From a translation standpoint, the speaker's pace and clarity made my job much easier. Overall, it was a pleasure to be a part of such a well-delivered and culturally enriching presentation.