

様式 A-1
(FY2025)

2025 年 12 月 9 日

サイエンス・ダイアログ 実施報告書

1. 学校名: 香川県立香川中央高等学校
2. 講師氏名: Dr. Maxime A. PARRA
3. 講義補助者氏名:
4. 実施日時: 2025 年 12 月 8 日 (月) 15:20 ~ 17:20
5. 参加生徒: 1 年生 1 人、 2 年生 8 人、 3 年生 0 人 (合計 9 人)
備考: 参加希望者
6. 講義題目: Black Holes and how to feed them
7. 講義概要:
 - ① 講師の自己紹介(出身国フランスの文化や観光地の説明、バイオグラフィー)
 - ② ブラックホール観測の研究を説明するための光学や天体の進化の基礎
光とは
恒星の進化、星の生と死
光を使った観測方法について
 - ③ XRISM 衛星データを用いたブラックホールの観測について
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 10 分
 - 2) 講義方法
プロジェクター使用による講義
 - 3) 事前学習
有 ・ 無 (どちらか選択ください。)
使用教材: 講師が講義で登場する予定の専門用語を事前に送ってくださったが、実際だったので当日配布することになりました。
9. その他特筆すべき事項:
天体物理学に関しての内容で、光学や化学の知識も必要とされたが、講師が様々な身近な例や、生徒も知っている日本の漫画のいち場面を例えるなどして説明していただき、興味を持って聞いていた。日本語はあまり話せませんとおっしゃいながらも、準備してきたスライドには日本語訳もつき、生徒が理解が難しいという雰囲気を醸すと噛み砕いて話して下さったりと状況に応じた対応をしてくださって大変助かり、有意義だったと思います。

Form B-2
(FY2025)
Must be
typed

Date (日付)
22-12-2025 (Date/Month/Year: 日/月/
年)

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

- Fellow's name (講師氏名) : MAXIME PARRA (ID No. P24712)

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

Yumi Hatta sensei

- Participating school (学校名) : 香川県立香川中央高等学校

- Date (実施日時) : 08-12-2025 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目) :

Black Holes and how to feed them

- Lecture format (講義形式) :

◆XOnsite ・ □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) 100 min (分), Q&A time (質疑応答時間) 15 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

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

The goal of my lecture was to introduce the topics of light, Black Holes, and enough basic astronomy/physics knowledge to allow presenting an overview of my research in astrophysics, as well as present some things about myself and the countries I've lived in (France, Italy).

I started by giving a short summary of my background, and present different cities and cultural aspects of French and Italian cities where I've lived and worked in the past, before ending with my current environment in Matsuyama, Shikoku.

I then introduced the concepts of waves and light, spectrum, emission and absorption. We used spectroscopes provided by Hatta-sensei for practical demonstrations. This allowed me to speak about how stars emit light, and give them an overview of the diversity of stars, in the fundamental diagram of stellar evolution, the HR diagram.

This allowed me to switch to the second part of my lecture: explaining how stellar evolution eventually leads to the creation of Black Holes. I shortly summarized how stars form and lead to planetary systems, then focused on the different ending scenarios, including the creation of red giants, neutron stars, and finally Black Holes. This was done without the introduction of complex physical topics, but instead simple descriptions of how the interior of a star functions and evolves.

After introducing the birth of Black Hole, I switched to the third and final topic of my presentation: explaining how Black Holes evolve, and our open questions regarding this subject, including the topics of my fellowship, outflows of matter launched from the environment of growing black holes, called “disk winds”. This included a short movie to explain visually how binary stellar systems evolve to a configuration where the matter of one star can be captured by the second star.

I highlighted the leading role of Japan and Japan’s new telescope, XRISM, in the current X-ray astrophysical landscape, presented the collaborations between many universities (including Ehime university), and finished on the topics of my current research.

We then had a short range of interactions and open discussion/questions with attendees, mostly (but not only) about non-science related topics.

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

I did not have officially a lecture assistant, but the host professor of the school I gave the lecture at provided extremely helpful help, helping translate my explanations along the course, bringing practical material to illustrate my topics (such as CD spectroscopes), and providing preliminary definitions of a glossary I sent before the course. She performed the role of a lecture assistant by herself.

My slides were written in voluntarily basic english, with difficult or technical words systematically translated to Japanese. The presentation was performed via a cycle of me explaining a topic in basic english, then the professor summarizing the main points in Japanese, to help students understand.

- Impressions and comments from the lecture assistant (講義補助者の方から、本プログラムに対する意見・感想等がありましたら、お願いいたします。) :