

(For JSPS Fellow)

Form B-5

Date (日付)

\_\_\_\_\_ (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): Ulrich Ebling (ID No. P15703 )

- Participating school (学校名): Yashiro High School, Chikuma, Nagano Pref.

- Date (実施日時): 06/02/2017 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): (in English) Quantum Gases – the coldest matter in the universe  
(in Japanese) \_\_\_\_\_

- Lecture summary (講演概要): Please summary your lecture 200-500 words.

The lecture was essentially the same as the one I gave in 2016, with a few improvements where the students last time had problems understanding me.

In the first part of my lecture, I told the students about my background and career. I showed examples of my previous research groups which had a very international composition. Then I explained the difference experimental physicists who work in laboratories and theoretical physicists like myself who only need pen and paper, to explain why I did not present an experiment. The remainder of the lecture started with a short introduction to quantum physics and a to give the students the necessary background. As an example I chose the photoelectric effect. The important part was to convey the notion that both light and matter can be described as particles or waves. In the next part I explained what temperature is and introduced the concept of absolute zero and the Kelvin temperature scale used in physics, including some examples. In the last and largest part of my lecture I showed a method of using laser beams to cool atoms to temperatures close to absolute zero, the key technology behind my research subject. Since my current research is relatively specialized, I spent only a few slides on this and focused more on the general topic of ultracold atomic gases. Very few questions were asked during the lecture even though at the beginning I encouraged the students to do so. The question session afterwards was more active.

- Language used (使用言語): English

- Lecture format (講演形式):

◆Lecture time (講演時間) 60 min (分), Q&A time (質疑応答時間) 30 min (分)

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

(講演方法 (例: プロジェクター使用による講演、実験・実習の有無など))

Projector and slides, blackboard for quick explanations

◆Interpretation (ex.: assistance by accompanied person, provided Japanese explanation by yourself) (通訳 (例: 同行者によるサポート、講師本人による日本語説明))

Keywords on the slides with Japanese translation, accompanying person explained things in more detail and translated questions asked in Japanese.

◆Name and title of accompanied person (同行者 職・氏名)

Takumi YOSHINO

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

- Impressions and opinions from accompanied person (同行者の方から、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。):