

(For JSPS Fellow)

Form B-5

Date (日付)

29/09/2015

(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): Othman Michel Benomar (ID No. P 11316 )
- Participating school (学校名): Senior High school at Komaba, University of Tsukuba
- Date (実施日時): 19/09/2015 (Date/Month/Year: 日/月/年)
- Lecture title (講演題目): (in English) The life of stars and of their planetary companions  
(in Japanese) 星と惑星の一生
- Lecture summary (講演概要): Please summary your lecture 200-500 words.

My second lecture for the JSPS sdialogue program was following approximately the same structure than my first one at the Ena high school. However, thanks to my longer stay in Japan, I could improve several parts and thus, hopefully have a lecture that is easier to understand by Senior high-school students.

The first half of my Lecture begun by presenting my country of origin (France) and its specificities (geography, famous places, food). Then the Lecture focused on why I became a researcher. I also described my life as a researcher in Japan and in the countries that I have visited. Finally the second half of the lecture presented a general introduction to astrophysics, to finish by more specifically talk about my research topic: the asteroseismology and the current status of the quest of exoplanets similar to earth in our galaxy. Here I summarize the content of my lecture.

France is a country which has most of its territories in Europe. France is very famous for its so called metropolitan area. However, France conquered many places around the world, so called overseas territories. This is mostly islands (Martinique, Guadeloupe, ...) and mostly touristic places. However, the biggest overseas territory is the Guyana, situated in south America. This place is famous because of the Kourou space center, from which Ariane 5 rocket is launch.

With 641185 km<sup>2</sup> and 66.4 Million inhabitant, France is roughly twice the size of Japan for only half its population. Therefore France is much less densely populated than Japan. France is famous for its numerous touristic places, such as the Eiffel tower or the Mont blanc. My country is also famous for its food. We found cheese and wine everywhere in France, but some regions have typical food. For example, the Foie gras comes from the north-eastern part of France and the fondue (cheese, wine, meat, bread) is a delicious typical mountain meal originally from the alps (near Italy and Switzerland).

Then why I became a scientist? Since very young (5 years old) I was interested in science, mostly, Astronomy and Archaeology. But at the university, I had to choose a career and given up archaeology. This is mostly because I always have been better in physics than in learning new languages. We can say that my

career choice was however highly inspired by my dreams and I encourage the youth to try to realise their dreams.

The universe is very mysterious. Its biggest mystery is that only 5% of the universe can be seen, the remaining 95% being called dark energy and dark matter. The term 'dark' refers to the fact that these unknown entities do not emit light. Any attempt to identify the nature of these dark objects was unsuccessful since more than 70 years. Despite that, the visible universe is still huge because it contains more than 500 billion galaxies, each galaxy containing several billion stars. We live in one of these galaxies, called the Milky Way. On a very clear and dark night, you can see it stretching in the sky on the form of a bar, this because it is a disk, and we live inside this disk, at 27000 light years from the center.

My researches focus on stars and on exoplanets and on life on these exoplanets. To study stars, we use the seismic waves that propagate within stars. Like in a bell, these waves resonate and the star pulsates at very frequencies that depends on its interior (pressure, density, ...). This is very similar to earth seismology and is called asteroseismology. The Kepler mission discovered that many stars around us have planets, some in the so-called habitable zone, where liquid water can exist. It is now believed that hundreds of planets of the size of earth can have liquid water at their surface, within few hundred light-years from us. Therefore, scientists now think that it is very likely that earth is not the only place where life has evolved.

- Language used (使用言語): English, Japanese (by the accompanying person)

- Lecture format (講演形式):

◆Lecture time (講演時間) 90 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))

Use of powerpoint and of the white board for some keywords

◆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))

Assistance by accompanied person

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

東京大学大学院理学系研究科物理学専攻博士課程学生 Shoya Kamiaka(上赤翔也)

◆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。):

今回講演者の方に同行させていただく機会を得て初めて、私はサイエンスダイアログプログラムの存在、及びそれがどういうものかを知りました。

実際に参加して、第一線の科学者が若者に科学の魅力を伝える様子を拝見し、このようなイベントはもっと多くの高校で普遍的に催されるべきだ、と感じました。

そして私自身、後続を広く研究の世界に誘うことも科学者としての役割の一つであるという認識を新たにするとともに、そのような研究者を目指す大学院生として襟を正される思いが致しました。

このような機会を与えていただいた日本学術振興会の方々に感謝致します。