

(For JSPS Fellow)

Form B-2
(FY2018)

Date (日付)

28/02/2019 (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): Fengliang Zhang (ID No. P17371)

- Participating school (学校名): Fukui Prefectural Takefu High School

- Date (実施日時): 21/02/2019 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): Structural health monitoring of large scale structures based on modern sensor technology

- Name and title of your accompanying person (講義補助者 職・氏名)

Rongxiu Chen, Master student at Kyoto University

- Lecture format (講演形式):

◆Lecture time (講演時間) 40 min (分), Q&A time (質疑応答時間) 10 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))

used projector, used mobile phone

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

For large scale structures, structural health monitoring (SHM) systems are commonly designed to collect structural response such as acceleration, strain, temperature, etc. This can be viewed as full-scale experiments of structures, based on which, local damage or overall condition of structures can be assessed to evaluate their safety or performance. This talk will introduce the basic concept of structural health monitoring, operational modal analysis, damage detection and system identification of supertall buildings and full-scale bridges. Three basic modal parameters of structures, i.e., natural frequency, damping ratio and mode shapes will be introduced and discussed. Some experiments and full-scale field vibration tests will be presented to introduce how the data can be collected from real structures based on the modern sensor technology. Some basic methods, such as Bayesian method will be presented to discuss how to extract modal parameters from a large amount of data. Some results based on the collected data and Bayesian methods will be shown to provide useful information for more understanding of structural health monitoring.

- Overall advice or comments to future participants in the program (今後の講師へのアドバイス):

It is the first time for me to teach high middle school students. It is quite impressive. To teach high

middle school students, at first, we should talk some thing that they can easily understand. Also we should attract their attention in the very beginning. Use some device such mobile phone as a tool to help in the lecture. At last, encourage the students to ask questions.

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

The students are ones of the best students I have met. They are very nice. The support of Suzuki Sensei is also greatly appreciated.

- 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。)

Mr. Chen is quite helpful and proactive in the whole process. I really appreciate his great help. Without him, I don't think I could give such a wonderful talk.