

LECTURE No. 19



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淡江大學熊貓講座
TAMKANG CLEMENT AND CARRIE CHAIR

**Gravitational
wave astronomy
with KAGRA**

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 May 31, 2023 (Wed.) 14:10-15:30
守謙國際會議中心有蓮國際廳 HC310
理學院 物理學系 敬邀

INTRODUCTION

- Panofsky Prize
- Japan Academy Prize for "Discovery of Atmospheric Neutrino Oscillations"
- Julius Wess Award for his "significant role in the Discovery of Atmospheric Neutrino Oscillations with the Super-KAMIOKANDE Experiment."

- Nobel Prize in Physics (2015): for the discovery of neutrino oscillations, which shows that neutrinos have mass.

Topic : Gravitational waves astronomy with KAGRA

ABSTRACT :

A completely new astronomy, gravitational wave astronomy, has been born recently. With gravitational waves, we would like to unveil the secrets of the Universe such as blackholes and neutron stars. In this lecture, I would like to discuss the gravitational wave detector, KAGRA, and the science to be carried out by these detectors.

MINUTE:

1. *Do you think AI is a good tool to be used in the analysis of gravitational wave data?*

K: Yes, machine learning is widely used in gravitational-wave data analysis. That is another approach.

2. *What can the international collaborations help the KAGRA project?*

K: In the past few years, we had difficulty on our budget. At this moment, we did get significant assistance from international collaborations. Ours overseas partners are our strong allies.

3. *Why is the configuration of Einstein Telescope so special? The other interferometers are in L-shape. But ET has triangle shape?*

K: Honestly, I don't know the reason. We just know the ET has very good sensitivity on detection of gravitational waves.

4. *We know Japan experiences a lot of earthquakes. So how can you reduce the noise from earthquakes?*

K: The instrument is constructed underground. In principle, it suppresses the earthquakes.

5. *When you start the vacuuming process, how to evacuate the personnel?*

K: we will announce it. And people can ride the bicycle back to the control room.