領域論壇：天文與重力
Session: Astronomy and Gravitation

Venue: 數學館 M212

Time	Speaker	Title of the Talk	Chair
10:20-10:45	林豐利	Weak Cosmic Censorship and Second Law of Black Hole Thermodynamics in Generic Gravity Theories	卜宏毅
10:45-11:10	吳建宏	Bayesian inference in cosmology	卜宏毅
11:10-11:35	林明楷	Hopes and challenges in modern planet formation	李悅寧
11:35-12:00	卜宏毅	Spacetime concept in general relativity and Black hole image	李悅寧

Weak Cosmic Censorship and Second Law of Black Hole Thermodynamics in Generic Gravity Theories

Feng-Li Lin

Department of Physics, National Taiwan Normal University

E-mail: linfl@ntnu.edu.tw

Abstract

Roger Penrose proposed the weak cosmic censorship conjecture to hide the naked singularity of a black hole behind its horizon. This can be understood as implied by the second law of black hole thermodynamics, which states that the area of a black hole horizon can never be decreased. However, it is unclear if this conjecture holds for generic theories of gravity. In this talk, I will show that the answer is positive.

Bayesian inference in cosmology

Kin-Wang Ng
Institute of Physics, Academia Sinica
E-mail: nkw@phys.sinica.edu.tw

Abstract

I will give a brief introduction to the Bayesian statistical method and how we use the method to infer cosmological parameters such as the matter content, the expansion rate, and the age of the Universe from cosmological observations such as supernovae, cosmic microwave background, and large-scale structures.

Hopes and challenges in modern planet formation

Min-Kai Lin

Institute of Astronomy and Astrophysics, Academia Sinica

E-mail: mklin@asiaa.sinica.edu.tw

Abstract

With the discovery of over 5000 extra-solar planets to date, the formation and evolution of planets and planetary systems is one of the most rapidly developing fields of astrophysics. In the standard 'bottom-up' scenario, planets form from planetesimals — km or larger-sized bodies. Planetesimals form from small, mm-cm size pebbles, which themselves form from micro-sized dust grains immersed in gaseous protoplanetary disks around young stars. I will describe several obstacles, but also new possibilities, on the road from dust to planets from recent theoretical modeling of planetesimal formation in modern models of protoplanetary disks.

Spacetime concept in general relativity and Black hole image

Hung-Yi Pu

Department of Physics, National Taiwan Normal University

E-mail: hypu@gapps.ntnu.edu.tw

Abstract

The theory of general relativity proposes that gravitation is a result of spacetime curvature. This talk will provide a brief overview of the mathematical structure used to describe spacetime in this framework. Additionally, we will delve into the intriguing concept of black holes and explore how recent observations by the Event Horizon Telescope align with general relativity predictions. By the end of this talk, you will gain a better understanding of the intricate relationship between spacetime and gravity, as well as the latest advancements in observational astronomy.