

# 講座大師賀曾樸 ( Paul T.P. Ho ) 演講與對談一

## 銀河中心 — 最近的超重質量黑洞

### The Closest Supermassive Black Hole in the Center of the Milky Way

#### 綱要：

宇宙裡最明亮的天體—「類星體」—的能量來源，目前認為可能是超重質量黑洞，理由是自黑洞近旁極深的位能阱抽取能量，是最有效率的一種能量提供方式。離我們最近的超重質量黑洞的例子，就是「人馬座A\*」，位在銀河系的最中心，離我們大約 8.5 千秒差距的距離。我們將討論對這個獨特的源的最新研究進展，分析如何得到對其質量的限制，介紹如何去了解其周邊輻射的結構，以及如何由這個研究中學到更多有關黑洞的物理。

Supermassive black holes have been suggested to be the powering source of quasars, the most luminous objects in the universe. The reason is that the extraction of gravitational energy from the deep potential wells of black holes, is the most efficient energy production mechanism. The closest example of such a supermassive black hole is the source SgrA\*, located at 8.5 kpc from us, at the very center of the Milky Way. We will describe the latest developments in the study of this unique source, how we are able to constrain its mass, how we can understand the structure of the emission from its surroundings, and how we might learn more about black hole physics.

## 講座大師賀曾樸 ( Paul T.P. Ho ) 演講與對談二

### 尋找其他的世界

#### Search for Other Worlds

##### 綱要：

在天文尖端研究中有一項神聖使命，就是在已知的宇宙中去尋找和我們相似的世界。自從遠古以來，人類仰首夜空，總不禁會自問：我們是孤單的嗎？現代天文學已發展出一些方法，能讓我們逐漸去回答這個問題。在過去幾年中，一連串在觀測上的努力導向了系外行星的發現。目前我們已經發現了超過 100 個系外行星系統的這個事實，告訴我們類似太陽系的系統在別處也可能存在。研究之門已經開啟，可以讓我們去探討是否允許生命存在的條件也可以在宇宙別處輕易地存在。我們將從恆星與行星的形成來討論系外行星，並介紹新近發展的儀器。

One of the holy grails of astronomical research has been to discover the place of the humankind in the context of the known universe. As long as the thinking mind had the opportunity to observe the heavens, since antiquity, the one constant question has been, are we alone? Modern astronomy has begun to provide us the tools to address this fundamental question. In the past few years, an avalanche of experimental efforts have been directed towards discovering extrasolar planets. The existence of over 100 extrasolar planets strongly suggests that solar systems such as our own can exist elsewhere. The door is open for us to find out and understand whether conditions which will support life as we know it, are easily produced elsewhere in the universe. We will discuss the extrasolar planets in the context of star and planet formation and the availability of new instrumentation.