KAVLI INSTITUTE FOR THEORETICAL PHYSICS

Presents

The Forty-Sixth KITP Public Lecture

Sponsored by Friends of KITP

Edward van den Heuvel

Life After Stellar Death:

Supernovae, Neutron Stars, Pulsars and Black Holes

Neutron stars are the most compact concentrations of "normal" matter known in nature, with the strongest gravitational fields. They are the collapsed remnants of the burned-out cores of stars that started out life with masses larger than about eight times that of our sun. Everything about neutron stars is extreme: their density, gravity, magnetic field and spin. They are spheres not larger than New York City, which contain over 400,000 times the mass of Earth, so compressed that a thimblefull of their material contains as much matter as half a million Boeing 747 Jumbo jets filled with passengers and cargo. Their surface gravity attraction is a hundred billion times that on Earth, their magnetic fields are typically a trillion times stronger than that of Earth, and their spin frequencies can be higher than 700 times per second. In the past 44 years, over 1800 neutron stars have been discovered, most of them as *radio pulsars*, regularly pulsing sources of radio waves, but also hundreds as sources of X and γ rays. Stellar black holes are the burned-out cores of stars more massive than about twenty times the sun. They can become *X-ray sources* if they are in binary systems, stealing matter from a companion star.

About the Speaker

EDWARD van den HEUVEL was born in 1940 in Soest, The Netherlands and received his Ph.D. at the University of Utrecht in 1968. He worked at the University of California, Santa Cruz from 1968 to 1969 and at the Universities of Utrecht, 1969 to 1974, and Brussels, 1970 to 1980. Since 1974 he has been Professor of Astrophysics at the University of Amsterdam and, until 2005, Director of the Astronomical Institute there. In 1995 he was awarded the Spinoza Prize, the highest science prize of the Netherlands, and in 2002, the EU Descartes Prize, the highest science prize of the European Commission, Brussels. Professor van den Heuvel's fields of expertise include stellar evolution, the physics of neutron stars and black holes, X and γ-ray astronomy and *radio pulsars*.

Wednesday, March 23, 2011

8:00 PM (reserved seats held until 7:50 PM)

Kavli Institute for Theoretical Physics, Main Seminar Room

Admission is Free

Seating is by RSVP only at:

http://www.kitp.ucsb.edu/public-lecture-rsvp

or call

(805) 893-6349

by March 18, 2011

Reserved seats are held until 7:50 PM

To make special arrangements to accommodate a disability, call the KITP at the number above.

LOT 10 PARKING

From the roundabout at Hwy 217, turn right onto Mesa Rd, merge into left lane, turn left at the first light into Lot 10 parking structure. **PARK**, **BUY a $3 permit** from the dispenser (near the elevator and stairs), **DISPLAY PERMIT** on dashboard. The KITP is right next door.

The KITP gratefully acknowledges its many friends in the community.

KITP Public Lecture Series