

THE  KAVLI PRIZE

KAVLI PRIZE IN
ASTROPHYSICS 2008

*The Norwegian Academy of Science and Letters has decided to award
the Kavli Prize in Astrophysics for 2008 to*



MAARTEN SCHMIDT

Emeritus Professor of Astronomy, California Institute of Technology, USA

and

DONALD LYNDEN-BELL

Emeritus Professor, Institute of Astronomy, Cambridge University, UK

*“for their seminal contributions
to understanding the nature of quasars”*

In 1963, **Maarten Schmidt** unlocked the gate to the far reaches of the Universe by correctly identifying emission lines in the optical spectrum of a radio “star” known as 3C273. That insight immediately showed that 3C273 is an extremely luminous, very distant object rather than a star in our own Galaxy. Objects like 3C273 are now known as quasars.

Schmidt’s breakthrough interpretation of the spectrum of 3C273 followed essential work by radio astronomers, who discovered quasars by their radio wave emission and measured their positions on the sky. **Schmidt** extended his discovery by finding quasars even more distant than 3C273 and showing that quasars were much more numerous when the Universe was young. **Schmidt** also devised powerful statistical techniques to measure the luminosity and space density evolution of quasars.

The extraordinary power emitted by quasars requires an extraordinary engine. Various proposals for the nature of the

quasar engine were advanced in the years following **Schmidt’s** discovery. The watershed in our theoretical understanding of the nature of quasars was Donald **Lynden-Bell’s** investigation in 1969 of the hypothesis that quasars were powered by gravity, through the accretion of material onto massive black holes.

Although others had suggested that quasars were powered by black hole accretion, **Lynden-Bell** argued persuasively that most of their luminosity comes from frictional heating in a rotating gaseous disk (the “accretion disk”); developed an approximate model for their spectrum; and suggested that these black holes are to be found in the centers of galaxies. He also pointed out that many nearby galaxies should contain black holes at their centers that do not currently shine (“dead quasars”) and that these could be detected by their gravitational influence on stars orbiting nearby, a prediction that has been observationally confirmed.

Maarten Schmidt’s and **Donald Lynden-Bell’s** seminal work dramatically expanded the scale of the observable Universe and led to our present view of a violent Universe in which massive black holes play a key role.

**The Norwegian Academy of
Science and Letters**

Drammensveien 78, 0271 Oslo, Norway

Phone +47 22 12 10 90

Fax +47 22 12 10 99

www.dnva.no

See also:

The Kavli Prize

www.kavliprize.no

The Kavli Foundation

www.kavlifoundation.org

