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[International Cooperation] Academia Sinica Astrophysicists Receive 12-meter Radio Antenna from US National Science Foundation

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Academia Sinica Newsletter (2011/04/14) The US National Science Foundation (NSF) announced recently that an international collaboration led by Academia Sinica Institute of Astronomy and Astrophysics (ASIAA) has been selected to receive a 12-meter radio antenna designed for submillimeter-wavelength astronomy. The ASIAA-CfA (Harvard-Smithsonian Center for Astrophysics: CfA) team was selected to receive the antenna from among 3 teams of applicants. The antenna was one of the three antennas built as prototypes for the Atacama Large Millimeter/Submillimeter Array (ALMA), a huge radio observatory currently being constructed in Chile. ASIAA represents Taiwan in participating in the international ALMA project via Japan and North America.

ASIAA and the CfA are long-term partners who have worked together on several projects including the construction and operation of the Submillimeter Array (SMA) on Mauna Kea in Hawaii, and the Taiwan American Occultation Survey on Lulin Mountain in Taiwan. Besides ASIAA and CfA, other participants in the Prototype Antenna Project include the MIT Haystack Observatory and the US National Radio Astronomy Observatory.

The astrophysicists plan to use the antenna to provide an extremely sharp, high-resolution look at targets of interest, through a process known as Global Very Long Baseline Interferometry (VLBI) at submillimeter wavelengths. In order to do this, they will link the newly acquired antenna with other millimeter/submillimeter telescopes like SMA and ALMA. The set up will provide angular resolution of 20 micro arc-second (1 micro arc-second = 1/3600000000 degree), which is equal to the apparent size of a NTD10 coin on the moon, the highest angular resolution astronomers have achieved so far.

Using this submillimeter VLBI, the astrophysicists plan to produce images of supermassive black holes located at the center of galaxies. They hope to obtain direct proof of the existence of black holes, and make possible the testing of General Relativity in the presence of strong gravitational fields, which has been an exciting topic in modern astrophysics.

Related website: http://www.cfa.harvard.edu/news/2011/pr201108.html

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Further Information:
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