

[Invited Talk]

Atacama Large Millimeter/submillimeter Array (ALMA)

Masato Ishiguro

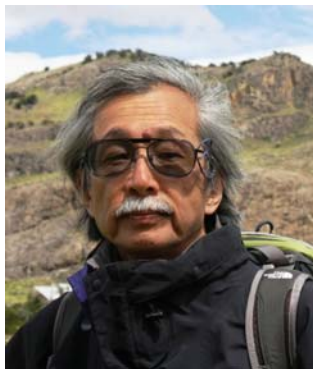
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Abstract

The Atacama Large Millimeter/submillimeter Array (ALMA) is the largest astronomical project under an international partnership of East Asia, Europe, and North America in cooperation with the Republic of Chile. ALMA will be composed of 66 high precision antennas with two antenna sizes, 54 12-m antennas and 12 7-m antennas. By reconfiguring antennas, the array can achieve an angular resolution equivalent to an antenna diameter up to 18km using aperture synthesis technique. All antennas will be equipped with front end receivers covering the frequency range from 84 GHz to 950GHz. The signals received by all antennas are transmitted through very long optical fibers to a large scale digital correlator which can process the broad band signal of 16GHz/baseline with 4096 spectral channels in real time.

With unprecedented angular resolution and spectral line capabilities, ALMA is expected to enable transformational research in various areas of millimeter and submillimeter astronomy, such as detailed structure of proto-planetary disks, detection of high redshift galaxies, and evolution of matter in the Universe. At present more than 30 antennas are located at the 5000m plateau in northern Chile, a part of which are used for the science verification and the initial science operation. The general view and current status of the ALMA project will be reported with a special emphasis on antenna and propagation topics. This document gives formatting instructions for authors preparing manuscripts for ISAP2012. The authors must follow the instructions given in this document. Entire document should be in Times New Roman Font with single space.

About the speaker



Masato Ishiguro received the B.E. and M.E. degrees in Electrical Engineering from Nagoya University, and the Ph.D degree in Astronomy from the University of Tokyo. He started his research in radio astronomy at Nagoya University in 1970 where he investigated radio interferometry techniques. In 1980, he moved to Tokyo Astronomical observatory of the University of Tokyo to join the project to construct large millimeter-wave telescopes at the Nobeyama Radio Observatory (NRO). He was in charge of constructing the Nobeyama Millimeter Array and also contributed to the open use of the telescopes. From 1990 to 1996, he was the director of NRO.

While doing research at NRO, he worked over a plan of large array at millimeter and submillimeter wavelengths. Since 1998, he had been leading the Japanese part of the international project to construct Atacama Large Millimeter/submillimeter Array (ALMA) in Chile. He was a professor of National Astronomical Observatory of Japan (NAOJ) since 1988 until he retired from NAOJ in 2009. He is now a professor emeritus of NAOJ and a member of International Astronomical Union (IAU).