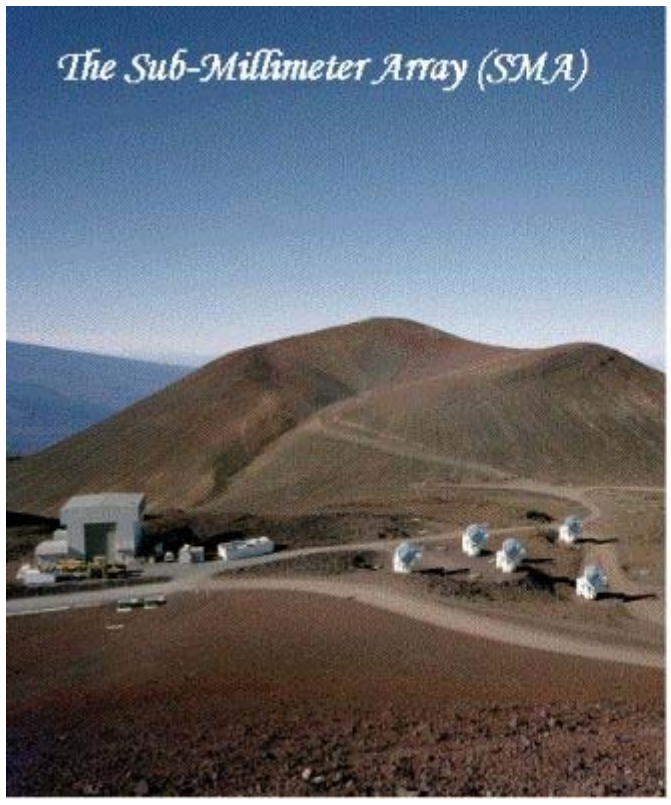
Sub-Millimeter Array Project

PRESS RELEASE

ASIAA PRESS RELEASE

Taiwan Astronomy joins the World Stage



The first SMA antenna made in Taiwan

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At the 199th meeting of the American Astronomical Society in Washington DC, on 9 January 2002, the Smithsonian Astrophysical Observatory (SAO) and the Academia Sinica Institute of Astronomy & Astrophyiscs (ASIAA) held a joint press conference to announce the first results of the partially completed first sub-millimeter-wave array (SMA) in the world.

In June 1996, President Yuan Tseh Lee of the Academia Sinica signed an agreement with the Smithsonian Institution of the USA to expand the SAO's 6-telescope SMA by adding two telescopes to be constructed in Taiwan. Now, five years later, the two telescopes built in Taiwan are standing on top of Mauna Kea, a 4300m high mountain on the island of Hawaii, forming an integral part of the SMA. Through this collaboration on this unique telescope facility, the ASIAA has developed its scientific and technical staff to an international level and is ready to probe the unknown in this largely unexplored sub-millimeter wavelength range. In Astronomy, as in many other scientific disciplines, new facilities and capabilities are crucial for new discovery.

Construction of the two SMA telescopes, which require unprecedented mechanical and electrical precisions, was a challenge to and the triumph of the collaboration of many organizations and university groups in Taiwan, in many disciplines that include composite materials, precision machining, structural analysis, super-conducting detectors, microwave engineering, cryogenics, control electronics and

most importantly system integration.The telescope construction, with the help of the SAO at a distance, was carried out jointly by the ASIAA, the Aeronautical Research Laboratory (ARL) of the Chungshan Research Institute, China Ship Building Corporation, Gigantex Corporation, and university groups at the National Taiwan University and the National Tsinghua University. As an indicator of the capability in
Taiwan, the carbon-fiber reinforced plastic tubes of the back-up structure of all eight SMA telescopes were manufactured by Gigantex Corporation in Changhua, under the supervision of the ARL.

The construction process has provided a very valuable experience in building a complicated state-of-the-art facility and enabled the accumulation of important capabilities for future projects in Taiwan. In particular, the ASIAA has built up a technical team that is now leading the construction of the Array for Microwave Background Anisotropy (AMiBA), in collaboration with the National Taiwan University
and the Australia Telescope National Facility.

All eight telescopes of the SMA will be completed by mid-2002 and full operation of the entire array of eight telescopes is expected to be in early 2003.

The ASIAA participation of the SMA has been funded mainly by the Academia Sinica, with contributions by the National Science Council towards the development of super-conducting mixer receivers.
