

**MEMORANDUM OF UNDERSTANDING BETWEEN
THE ASTRONOMY DEPARTMENT OF
THE UNIVERSITY OF CHILE AND
THE SMITHSONIAN ASTROPHYSICAL OBSERVATORY**

The Submillimeter Receiver Laboratory of the Smithsonian Astrophysical Observatory is engaged in the development of state-of-the-art heterodyne receivers at submillimeter wavelengths. Recent technological developments allow the extension of this technology to frequencies above 1 THz. In particular, low-noise heterodyne receivers capable of detecting a number of astrophysically interesting spectral lines above 1 THz can now be built.

Until now it has been generally accepted that astronomical observations at frequencies above 1 THz can not be made from a ground-based site. However, recent measurements of atmospheric transmission at Chajnantor, in northern Chile, demonstrate that astronomical observations could be made from the ground at frequencies above 1 THz.

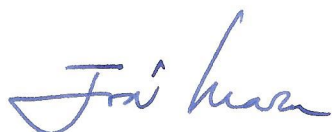
While the Chajnantor site occasionally offers a glimpse through the atmosphere in windows centered at 1.02, 1.3, and 1.5 THz, available data indicates that good observing conditions would occur infrequently. However, a nearby site about 30 km NNW of Chajnantor, located on a high plateau about 1 km square at 5,500 m altitude in the region of Cerro Sairecabur, should offer a substantial improvement in atmospheric transmission over any other site. This plateau may offer a unique opportunity to pursue THz astronomy from the ground.

The Astronomy Department of the University of Chile has made a substantial commitment to the development of astronomical observatories in northern Chile through its involvement in the future ALMA, the CBI, and a number of other international collaborations. Also, the Astronomy Department of the University of Chile has a keen interest in exploring the feasibility of ground-based observing at THz frequencies.

Therefore, the University of Chile and the Smithsonian Astrophysical Observatory agree to collaborate in scientific projects of mutual interest on the following basis:

1. Joint measurements of the atmospheric transparency will be conducted in the area of Cerro Sairecabur and other areas in the II Region of Chile as part of a site testing effort prior to the development of a terahertz telescope.
2. The Astronomy Department of the University of Chile will obtain the permits required to deploy instrumentation and equipment in the area of Cerro Sairecabur and other areas in the II Region of Chile, and will collaborate in the scientific analysis and interpretation of collected data.

3. If and when SAO obtains funding for a terahertz telescope, the Astronomy Department of the University of Chile and the Smithsonian Astrophysical Observatory will make their best efforts towards the signature of an agreement to allow the development, importation, installation, and operation of the Terahertz Telescope and related instrumentation in Chile.
4. This MOU will be in effect for an initial period of 3 years from the date of signing, and may be extended or amended by mutual written consent only.



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