

ASTE observations of dense molecular gas in galaxies

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Abstract. Atacama Submillimeter Telescope Experiment (ASTE) is a joint project between Japan and Chile for installing and operating a 10 m high precision telescope in the Atacama Desert in order to explore the southern sky through the submillimeter wavelength. We have achieved an accuracy of 19 μm (rms) for the main reflector surface and a stable radio pointing accuracy of about 2 arcsec (rms). A 350 GHz cartridge type SIS mixer receiver achieves good performance with a typical system noise temperature of 150 ~ 250 K in DSB and a main beam efficiency of 0.6 ~ 0.7 during winter nights.

A large scale CO(3-2) imaging survey of nearby galaxies using ASTE is now in progress. One of our goals is to compare our wide area CO(3-2) images with existing CO(1-0) data as well as distributions of massive star formation tracers (i.e., H α and radio continuum emission) in order to understand the physical mechanism which controls the global star formation properties such as star formation efficiency. Initial CO(3-2) maps of some sample galaxies (M 83, NGC 604 in M 33, NGC 1672, & NGC 7130) are reported.

Keywords. galaxies: ISM, galaxies: starburst, submillimeter, telescopes

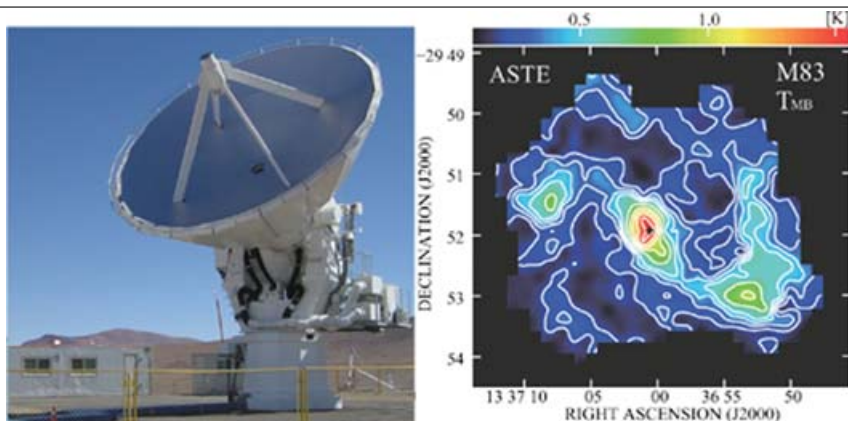


Figure 1. (left) ASTE observatory at Pampa la Bola (4860 m) in the Atacama desert, Chile. (right) A CO(3-2) peak temperature map of M83 taken with ASTE (Muraoka *et al.* 2006).

References

- Muraoka, K., *et al.* 2006, *PASJ* submitted
Tosaki, T., *et al.* 2006, this volume