



AST/RO sub-mm survey of the galactic center

C. L. Martin¹, W. M. Walsh², K. Xiao³, N. F. H. Tothill⁴, J. Harnett⁴, A. P. Lane⁴,
A. A. Stark⁴, and C. K. Walker⁵

¹ Oberlin College, Dept. Physics and Astronomy, 110 N. Professor St., Oberlin, OH 44074,
USA e-mail: Chris.Martin@oberlin.edu

² Univ. New South Wales, Sydney, Australia

³ Case Western Reserve Univ., Cleveland, OH, USA

⁴ Harvard-Smithsonian CfA, 60 Garden St., MS-12, Cambridge, MA 02138, USA

⁵ Steward Observatory, Univ. Arizona, Tucson, AZ, USA

Abstract. To understand the strongly excited gas near the center of our own galaxy, detailed surveys in a variety of higher excitation states are required. To aid in this effort, the Antarctic Sub-millimeter Telescope and Remote Observatory (AST/RO, a 1.7m diameter sub-millimeter-wave telescope at the geographic South Pole) has completed a fully sampled survey of CO(7-6), CO(4-3), [CI](³P₂-³P₁), and [CI](³P₁-³P₀) in a three square degree region around the Galactic Center (Martin et al., *ApJS*, 150, 239 (2004)). In addition to this dataset, AST/RO has recently completed a survey area around Clump 1 and 2, thus covering the bulk of strongly excited gas near the center of the galaxy. This dataset comprises nearly a million distinct telescope pointings over many square degrees of the sky. To handle a sub-mm dataset of this size required the development of new automated observational methodologies, reduction techniques, and visualizations.

Key words. Galaxy: center – Galaxy: kinematics and dynamics – Submillimeter – ISM: molecules