

A Cloud-Scale View of the Molecular Gas Disk in the Whirlpool Galaxy

E. Schinnerer¹, S. Meidt², A. Hughes^{3,4}, A. Leroy⁵, J. Pety^{6,7}, M. Querejeta⁸, and F. Bigiel⁹

¹ *MPIA, Königstuhl 17, 69117 Heidelberg, Germany*

² *Sterrenkundig Observatorium, Universiteit Gent, Krijgslaan 281 S9, B-9000 Gent, Belgium*

³ *CNRS, IRAP, 9 Av. du Colonel Roche, BP 44346, F-31028 Toulouse cedex 4, France*

⁴ *Université de Toulouse, UPS-OMP, IRAP, F-31028 Toulouse cedex 4, France*

⁵ *Department of Astronomy, The Ohio State University, 140 West 18th Ave, Columbus, OH 43210, USA*

⁶ *IRAM, 300 rue de la Piscine, F-38406 Saint Martin d'Hères, France;*

⁷ *Sorbonne Université, Observatoire de Paris, Université PSL, École normale supérieure, CNRS, LERMA, F-75005, Paris, France*

⁸ *Observatorio Astronómico Nacional (IGN), C/Alfonso XII 3, Madrid E-28014, Spain*

⁹ *Argelander-Institut für Astronomie, Universität Bonn, Auf dem Hügel 71, 53121 Bonn, Germany*

The cloud-scale view of the molecular gas disk in the nearby spiral galaxy M51a (the Whirlpool galaxy) as obtained by the IRAM instruments has provided new insights into the organization of the bulk molecular gas and the relation of these properties to the gas' star formation capabilities. Here I will review the key results of the IRAM Large Program PAWS (PdBI Arcsecond Whirlpool Survey) and provide an outlook of the insights that we expect to gain from the newly approved NOEMA Large Program to obtain cloud-scale imaging of multiple molecular gas tracers in the 3mm window.