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

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The nearby galaxy M51 (also known as the Whirlpool galaxy) hosts an iconic grand-design spiral pattern and has been observed by all major facilities across the electromagnetic spectrum. IRAM’s large program PAWS (PdBI+30M Arcsecond Whirlpool galaxy Survey, PI Schinnerer) observed the molecular gas reservoir in the inner ~8kpc in its CO(1-0) transition at ~50pc resolution and was the first to resolve the giant molecular cloud (GMC) population in a massive star-forming spiral galaxy. PAWS clearly demonstrated that GMC properties vary with galactic environment. I will summarize highlights from PAWS, present recent results from the ~1000 pointing mosaic of the nearby late-type spiral galaxy IC342 (Pety et al. subm.) as well as introduce the ongoing large NOEMA+30m program (PI Schinnerer & Bigiel) to map the dense molecular gas phase in GMCs in the central part of M51.