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High Mass Star and Cluster Formation in the Galaxy

Star formation is the most important driver of galaxy evolution. Massive stars, those producing ionizing radiation and supernovae, shape the interstellar medium. They heat the gas, drive turbulence, and destroy clouds. Despite their clear importance, we do not know exactly where, how, and how often these stars form. Addressing these questions is an essential step toward a complete theory of star formation. I will present studies of star-forming environments in the Galactic plane, showing when and on which scales turbulence and stellar feedback are the dominant processes. In low-mass local regions, star formation is slow and reasonably well understood and feedback is weak. In massive, dense protoclusters, stellar feedback affects different physical scales over time, first controlling local collapse conditions and then evaporating the stars' parent clouds. These high-mass protoclusters form stars efficiently. In our Galaxy's center, star formation is suppressed by enhanced turbulence, which we directly observe affecting gas temperature. I will conclude by discussing how ongoing high-resolution observations of accretion toward high-mass protostars will constrain the physical mechanisms governing star formation.