

The Density Structure of Forming Massive Clusters

The most massive forming clusters in the Galaxy have so far been observed only in a star-rich phase. Unlike their lower-mass counterparts, they may not go through a starless phase, or such a phase may be foreshortened or observably different than the star-rich phase. Nonetheless, after the formation of the first handful of O-stars, an enormous reservoir of gas remains. Theories driven by simulations of collapsing clouds suggest that this gas should not be available to the forming cluster unless it can reach the cluster within a crossing time. Much of this gas is clearly bound to the forming cluster, though, and is quite likely to participate in star formation. We present observations of the volume density of the gas in and around a forming massive cluster in W51. We have detected large mass of low-density, turbulent gas, some of which is clearly not yet star-forming but nonetheless bound to the cluster and able to feed its continuing formation.