P148a The most massive cores in the 70 μm-dark massive clumps

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Infrared dark clouds (IRDCs) are cold, dense regions thought to host the earliest stages of high-mass star formation. To understand core properties in the very early phase, we conducted ALMA 1.3 mm continuum observations at an angular resolution of $1''.2$ ($\sim$0.02 pc at 4 kpc) toward thirty-nine clumps, parts of IRDCs. Our targets are 70 μm-dark, massive (220–4500 $M_\odot$), dense (>0.1 g cm^{-2}), and cold (10–20 K) clumps at distances between 2 and 6 kpc. Thanks to mosaicking the whole area of clumps and the large sample number, we identify $\sim$900 cores with masses of 0.06–77 $M_\odot$. We reveal that most (34/39) clumps only host low- to intermediate-mass cores, not enough to form high-mass stars by core accretion. In particular, the masses of the most massive cores (MMCs) in 22 clumps are only 2–10 $M_\odot$. We find eight high-mass ($\gtrsim 30\,M_\odot$) protostellar cores and no high-mass prestellar cores. Although our observations resolve most clumps in a network of filaments, from which 16 contain hub systems, all high-mass cores except one and the majority of the MMCs are not located at prominent hub systems. It implies that the inflow along the multiple filaments is not yet an efficient process at the earliest stages of high-mass star formation. The dust continuum emission also reveals no strong correlation between clump mass and the mass of the MMCs. In this talk, we will summarize the core properties revealed by the dust continuum emission.