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The ALMA-ATOMS/QUARKS survey: what we have learned about the formation and evolution of high-mass proto-clusters

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To statistically investigate the star formation process in the Galaxy, we initiated the ALMA-ATOMS/QUARKS survey programme at ALMA, which observed about 140 high-mass proto-clusters at band 3 and band 6 under an angular resolution of ˜0.3-2 arcsec. The main science goals of the ALMA-ATOMS/QUARKS survey project are: (i) to deepen the understandings of the dense gas star formation law by studying the spatial distributions of various dense gas tracers in a large sample of Galactic clumps and evaluating how much of molecular gas is participating in star formation; (ii) to investigate how stellar feedback from formed OB (proto)stars influences the surrounding gas distributions and the next generation of star formation in their natal clumps; (iii) to resolve filaments and to study their roles in protocluster formation. I will talk about the current status of this survey and future plans.

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