

B21a **The CO survey of Merger Remnants with ALMA**

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It has been long predicted from numerical simulations that a major merger of two disk galaxies results in a formation of the spheroid-dominated early-type galaxy. Contrary to this classical scenario of galaxy merger evolution, recent simulations with more realistic gas physics have shown that not all of the major mergers will become an early-type galaxy, but some will reemerge as a disk dominated late-type galaxy. In order to check this scenario and look for observational evidence of a forming molecular disk, we have conducted new CO observations toward 27 merger remnants with ALMA, SMA, and CARMA. Our sample is selected solely based on optical morphology that suggests advanced stages of the merger. The final number of our sample is 37 including seven galaxies undetected in the CO line after combining with archival data. We find that 65 % (24/37) of the sample show kinematical signatures of the molecular gas disk in their velocity fields. However, the majority of the merger remnants except for a few shows a compact molecular gas disk relative to the stellar spheroidal component. Unless the disks grow significantly, for example from the return of ejected molecular gas or tidal HI gas, the majority will likely evolve into spheroid dominated early-type galaxies. We tentatively suggest that a few sources with extended gas disks may evolve into disk dominated late-type galaxies, if there are no further mechanism to transport the molecular gas toward the central region.