R39c CO Observation of the Virgo Spiral Galaxy NGC 4254

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NGC 4254 (M99) is Sc I galaxy belonging to Virgo Cluster. Unlike normal spiral galaxy called "grand design", it has three spiral arms, and one arm is prominent. The "one-armed" (Phookun et al. 1993) spiral galaxy like this is usually thought as having undergone an interaction with the companions. However, NGC 4254 has no major companions. So, we have to consider another processes producing one-armed spiral structure.

NGC 4254 is already observed by Sakamoto et al. (1999) with NMA C & D array configuration. They said that there are three molecular spiral arms. Then, in 1999-2000, we carried out CO (J=1-0) observation of NGC 4254 with NMA AB, C, & D array configuration, achieving higher angular resolution.

We have obtained moment maps of NGC 4254 having angular resolution of $2.34'' \times 2.99''$ using natural weighting function and of $1.53'' \times 1.68''$ using uniform weighting function, corresponding to 183pc $\times$ 233pc and 120pc $\times$ 131pc, respectively. From zeroth moment map, we conclude that NGC 4254 has 1.5kpc ring and two spiral arms. However, from first moment map, the dynamical center is shifted from the ring center to NW about $7''$, and it seems to have three spiral arms, predicted by Sakamoto et al. (1999).

Comparing to optical images (Frei et al. 1996, González et al. 1996), ring & two arm model seems to be superior to three arm model. Now, we will discuss the superiority of two models and the offset of dynamical and/or optical center.