

**T06b      The Environment of Passive Spiral Galaxies in the SDSS**

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In previous work on galaxy clusters, several authors reported a discovery of an unusual population of galaxies, which have spiral morphologies, but do not show any star formation activity. These galaxies are called “passive spirals”, and left a great impact on astronomical community since it has been difficult to understand the existence of such galaxies. Using a volume limited sample ( $0.05 < z < 0.1$  and  $M_r < -20.5$ ) of the Sloan Digital Sky Survey data, we have made a through search for passive spirals and studied environment of passive spiral galaxies as a function of local galaxy density and cluster-centric-radius. It is found that passive spiral galaxies live in local galaxy density  $1 \sim 2 \text{ Mpc}^{-2}$  and  $1 \sim 10$  cluster-centric virial radius. Thus the origins of passive spiral galaxies are likely to be cluster related. These characteristic environments coincide with the previously reported environment where galaxy star formation rate suddenly declines (Gomez et al. 2003) and the so-called morphology-density relation turns (Goto et al. 2003). It is likely that the same physical mechanism is responsible for all of these observational results. The existence of passive spiral galaxies suggest that a physical mechanism that works calmly is preferred to dynamical origins such as major merger/interaction since such a mechanism can destroy spiral arm structures. Compared with observed cluster galaxy evolution such as the Butcher-Oemler effect and the morphological Butcher-Oemler effect, passive spiral galaxies are likely to be a galaxy population in transition between red, elliptical/S0 galaxies in low redshift clusters and blue, spiral galaxies more numerous in higher redshift clusters.