

Z126b Do galaxies spin randomly?

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Analyses of the large-scale density perturbation through observations of CMB and galaxy distributions yielded the standard picture of Λ CDM model of the universe. Studies on the large-scale distribution of spin vectors of galaxies are of interest to further constrain the model of the universe. Spin vector of individual galaxy can be inferred by the ellipticity and the position angle of the minor axis of the image with unresolved four-fold degeneracy. Another complementary approach for spiral galaxies is to use spiral winding direction S-wise or Z-wise as projected on the sky plane. Since all the spiral features are trailing, not leading, this single bit of information provides robustly the sign of the line-of-sight component of the spin vector of the galaxy with two-fold degeneracy. This degeneracy is resolved if we know which side along the major axis of the galaxy is approaching to us. We have compiled spin catalog of $\sim 90,000$ spirals from the PanSTARRS ($z \leq 0.05$) and HSC images ($z \leq 0.3$) and tentative results of their analyses to look for any symmetry breaking in the distribution of spin vectors are reported. PFS observation of spirals with fibers positioned at the center and another exposure at a position offsetted along the major axis will provide tremendous increase of sampled galaxies with measured spin vectors for this kind of studies.