

THE ENVIRONMENTAL DEPENDENCE OF STRUCTURES FOR MASSIVE GALAXIES FROM THE HYPER-SUPRIME CAMERA SURVEY

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ABSTRACT

Many recent observations and numerical simulations suggest that nearby massive, early-type galaxies are formed through a “two-phase” process. In the proposed second phase, the extended stellar envelope was accumulated through many dry mergers. (XX TODO)

Subject headings: galaxies: elliptical and lenticular, cD — galaxies: formation — galaxies: photometry — galaxies: structure — galaxies: surveys

1. INTRODUCTION

2. MULTI-COMPONENT DECOMPOSITION IN *B*- AND *R*-BAND

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APPENDIX

A. ATLAS OF 1-D PROFILES

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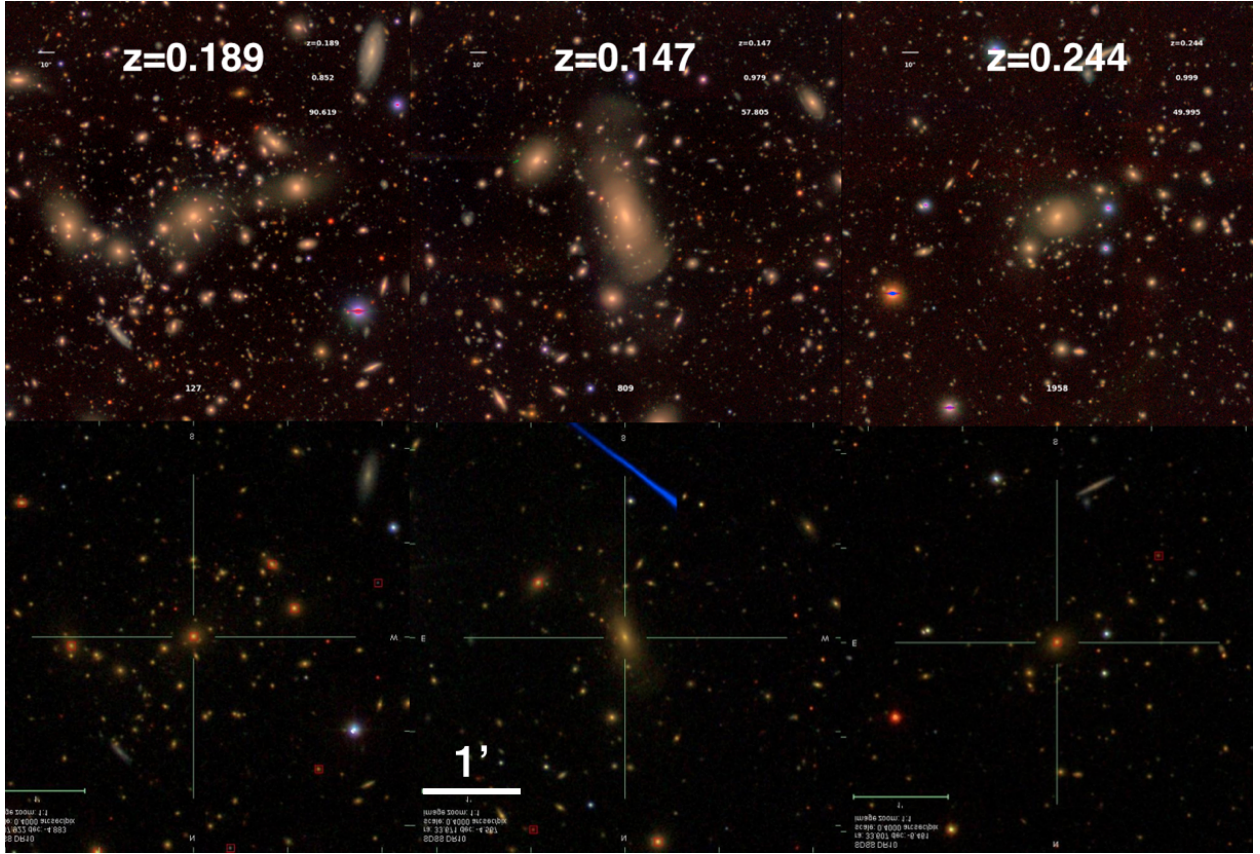


FIG. 1.— Cartoons that illustrate the basic idea of the proposed method for the estimation of average merger mass ratio. The style is adopted from Faber et al. (2007). The upper panels show the basic picture of the “two-phase” formation scenario. The lower panel describes a general picture for the evolution of massive galaxies on the M_* -color plane. After massive ETGs were quenched, they quickly moved to the red-sequence, and gradually evolved along it as they are becoming redder due to the aging of stellar population, and more massive due to the accumulation of extended stellar envelope through many minor (dry) mergers. Since the stellar content of smaller system should have lower metallicity, the outer envelope naturally has a bluer color compared to inner region. And, such color difference reflects the average mass ratio of all mergers that contribute to the second phase of evolution. Larger color difference means more stellar material came from smaller galaxies, hence makes minor merger more important.