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Measuring the Red Sequence Slope in a Distant Galaxy Cluster

ERIN SCHULTZ, GREGORY RUDNICK, University of Kansas — Our project goal is to constrain the possible stellar mass dependence of galaxy ages for red sequence galaxies. We use the Y, J, and K-band data collected from the Very Large Telescope in Chile of the z = 1.62 galaxy cluster XMM-LSS J02182-051020. This spectroscopically confirmed galaxy cluster is one of the only known massive clusters at an epoch close to the time when stars stopped forming within red sequence galaxies. For red sequence galaxies, which have little recent star formation and little dust, the color is an indicator of the luminosity weighted age of the stars. This is in turn correlated to the last epoch of significant star formation. At the same time, the mass of such a galaxy is correlated to its magnitude. The more stars a galaxy contains, the more massive and brighter the galaxy. The slope of the red sequence in color-magnitude space, therefore, gives an indication of the dependence of galaxy age on stellar mass. We use the age-sensitive Y-J color and measure a slope of zero for the red sequence in Y-J vs. J. We interpret this to mean that the age does not depend strongly on the mass of the galaxy. If time allows, we will present the limits on the slope of the color-magnitude relation and will discuss what limits this corresponds to on the age dependence with mass.

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