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Title:	Galaxy and Mass Assembly (GAMA): Formation and growth of elliptical galaxies in the group environment
Authors:	Mahajan, Smriti (/jspui/browse?type=author&value=Mahajan%2C+Smriti)
Keywords:	Galaxies: elliptical and lenticular Galaxies: formation Galaxies: groups: general Galaxies: interactions
Issue Date:	2017
Publisher:	Oxford University Press
Citation:	Monthly Notices of the Royal Astronomical Society, 467 (4)
Abstract:	<p>There are many proposed mechanisms driving the morphological transformation of disc galaxies to elliptical galaxies. In this paper, we determine if the observed transformation in low-mass groups can be explained by the merger histories of galaxies. We measured the group mass-morphology relation for groups from the Galaxy and Mass Assembly group catalogue with masses from 1011 to 1015 <math>M_{\odot}</math>. Contrary to previous studies, the fraction of elliptical galaxies in our more complete group sample increases significantly with group mass across the full range of group mass. The elliptical fraction increases at a rate of <math>0.163 \pm 0.012</math> per dex of group mass for groups more massive than 1012.5 <math>M_{\odot}</math>. If we allow for uncertainties in the observed group masses, our results are consistent with a continuous increase in elliptical fraction from group masses as low as 1011 <math>M_{\odot}</math>. We tested if this observed relation is consistent with the merger activity using a GADGET-2 dark matter simulation of the galaxy groups. We specified that a simulated galaxy would be transformed to an elliptical morphology either if it experienced a major merger or if its cumulative mass gained from minor mergers exceeded 30 per cent of its final mass. We then calculated a group mass-morphology relation for the simulations. The position and slope of the simulated relation were consistent with the observational relation, with a gradient of <math>0.184 \pm 0.010</math> per dex of group mass. These results demonstrate a strong correlation between the frequency of merger events and disc-to-elliptical galaxy transformation in galaxy group environments.</p>
Description:	Only IISERM authors are available in the record.
URI:	<a href="https://ui.adsabs.harvard.edu/abs/2017MNRAS.467.3934D/abstract">https://ui.adsabs.harvard.edu/abs/2017MNRAS.467.3934D/abstract</a> ( <a href="https://ui.adsabs.harvard.edu/abs/2017MNRAS.467.3934D/abstract">https://ui.adsabs.harvard.edu/abs/2017MNRAS.467.3934D/abstract</a> ) <a href="http://hdl.handle.net/123456789/2469">http://hdl.handle.net/123456789/2469</a> ( <a href="http://hdl.handle.net/123456789/2469">http://hdl.handle.net/123456789/2469</a> )
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