Massive Young Star Clusters Near and Far: From the Milky Way to Reionization
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# Young Star Cluster Population of NGC 2997

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We study the star cluster population of NGC 2997, a giant spiral galaxy targeted by the Snapshot *Hubble U*-band Cluster Survey (SHUCS).

SHUCS aims to characterize the star cluster populations of a sample of nearby spiral galaxies (GO 12229, P.I. Linda Smith). We obtained *U*-band imaging with WFC3 on *Hubble Space Telescope* (HST) to complement archival *BVI* imaging. We measure accurate ages, masses, and extinctions for the star cluster population of each galaxy via SED-fitting. We can then study the cluster luminosity and mass functions, cluster formation efficiency, signatures of cluster disruption, and how all of these relate to the environment (Adamo et al. 2012; Konstantopoulos et al. 2013).

NGC 2997 is a spiral galaxy located at 9.5 Mpc harboring a star-forming circumnuclear ring. We find the cluster luminosity functions behave as power-laws with indices of $-1.7$ to $-2.3$. Some deviations from a pure power-law shape are present. However, the mass function follows a pure power-law of index $-2.2 \pm 0.2$ with no truncation at the high mass end. We find a low rate of cluster disruption over the last 100 Myr based on the power-law index of the cluster age distribution, $\zeta \sim -0.1$. We estimate the cluster formation efficiency ($\Gamma =$ CFR/SFR) over the last 100 Myr, finding $7 \pm 2\%$ in the disk, $12 \pm 4\%$ in the circumnuclear ring, and $10 \pm 3\%$ for our entire footprint. This study highlights the need for wide-field *UBVI* coverage of galaxies to study cluster populations in detail, but also shows that a small sample of clusters can provide significant insight into the population's characteristics (Ryon et al. 2014).

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## References

Adamo, A., et al. 2012, MNRAS, 426, 1185
Konstantopoulos, I. S., et al. 2013, AJ, 145, 137
Ryon, J. E., et al. 2014, in preparation

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