



UNIVERSIDAD TÉCNICA
FEDERICO SANTA MARÍA

DEPARTAMENTO
DE FÍSICA

Defensa Seminario de grado para optar al grado de Licenciado en Astrofísica.

Tomás Francisco Fuentes Fuentes

Tema: *Characterization of BreakBRD-type galaxies sample.*

Comisión:

- Dr. Rory Smith (profesor guía)
- Dra. Yara Jaffé
- Dr. Hyowon Kim, Korean Astronomy and Science Institute



<https://us02web.zoom.us/j/83353464403?pwd=YjV3RkhjdDZSb0pPNUNKRXYrQUdDQT09>

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Abstract:

BreakBRD (break bulge in red disk) galaxies are a new sample of spiral galaxies presented in Tuttle and Tonnesen (2020), these galaxies have a red disk, but concentrated star formation, measured by Dn4000. In this thesis work we search for galaxies with morphological characteristics such as breakBRD through a visual classification of high resolution RGB images obtained

from the observations of the Hyper Suprime Cam Telescope, from its Public Data Release 3. The galaxies are within groups/clusters with masses $M_{\odot} \geq 10^{13}$ and a cut in the redshift $z \leq 0.2$, the observed host corresponds to the RXGCC survey. We found 154 breakBRD galaxy candidates (approximately 5.55%), corrected their photometry to study their Color magnitude diagram, calculated their stellar masses, compared our sample with the Chang 2015 catalog and found that a large part of our sample is in the star-forming region with a percentage transitioning to the green valley. We used the X-ray survey measurements to study that the mass of the group/cluster does not affect the number of candidates, suggesting that not only environmental effects produce this state. The stellar masses are distributed in a range $10^9 \leq M_{\odot} \leq 10^{11}$, which indicates that the mass-driven mechanisms do not apply to the whole sample.

Martes 26 de marzo 2023 a las 9:00 hrs. - Sala Conferencias Dr. Luciano Laroze, E300