F. Annibali1,2, L. Greggio1,3, M. Tosi1, A. Aloisi4, Claus Leitherer5
1 INAF-Osservatorio Astronomico di Bologna, Via Ranzani 1, I-40127 Bologna, Italy
2 SISSA, via Beirut 4, 34014 Trieste, Italy
3 INAF-Osservatorio di Padova, Vicolo dell’Osservatorio 5, I-35122 Padova, Italy
4 Johns Hopkins University 3400 North Charles St., Baltimore, MD 21218
5 Space Telescope Science Institute, 3700 San Martin Drive, Baltimore, MD 21218
6 Based on observations with the NASA/ESA Hubble Space Telescope, obtained at the Space Telescope Science Institute, which is operated by AURA for NASA under contract NAS5-26555

abstract
We infer the star formation history in different regions of the blue compact dwarf NGC 1705 by comparing synthetic color-magnitude diagrams with HST optical and near-infrared photometry. We find that NGC 1705 is not a young galaxy because its star formation commenced at least 5 Gyr ago. On the other hand, we confirm the existence of a recent burst of star formation between 15 and 10 Myr ago. We also find evidence for new strong activity, which started 3 Myr ago and is still continuing. The old population is spread across the entire galaxy, while the young and intermediate stars are more concentrated in the central regions. We derive an almost continuous star formation with variable rate, and exclude the presence of long quiescent phases between the episodes during the last ≈ 1 Gyr. The central regions experienced an episode of star formation of $\sim 0.07 \text{ yr}^{-1}$ (for a Salpeter initial mass function [IMF]) 15 to 10 Myr ago. This coincides with the strong activity in the central super star cluster. We find a rate of $\sim 0.3 \text{ yr}^{-1}$ for the youngest ongoing burst which started $\sim 3$ Myr ago. This is higher than in other dwarfs and comparable to the rate of NGC 1569. The star formation rate of earlier episodes is not especially high and falls in the range $10^{-3} - 10^{-1} \text{ yr}^{-1}$. The IMF is close to the Salpeter value or slightly steeper.