ULTRAVIOLET POPULATION SYNTHESIS OF STARBURST GALAXIES OBSERVED WITH HST

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Starburst galaxies are ideal laboratories to study both the physics of massive stars and processes important in galaxy formation and evolution. Observations of starburst galaxies at UV wavelengths are crucial because only in this spectral regime can we directly observe the spectroscopic signatures of the hot, massive stars that power the emission at other wavebands. UV signatures from massive stars are mainly broad spectral features (*e.g.* P Cygni profiles of SiIVλ1400, and CIVλ1550) formed in the stellar winds.

We present a progress report of a study of the starburst galaxies NGC3690, NGC4670, and NGC7552 using UV spectra collected with the *FOS* on board *HST*. We synthesized the UV spectrum using the latest generation of stellar evolution models, stellar atmospheres, and a line profile library based on IUE high dispersion spectra of massive stars. We generated a series of models for the two extreme cases of a continuous and an instantaneous burst of star formation with a Salpeter-type IMF (*i.e.* slope of 2.35), considering the cut-off masses of $M_{low} = 1\ M_\odot$ and $M_{upp} = 30\text{-}120\ M_\odot$.

The relatively narrow SiIV and CIV lines and the absence of strong emission in NGC3690 and NGC4670 make it very difficult of fit a model with $M_{upp} > 50\ M_\odot$. Good models to these galaxies are limited to a young, $\simeq$ 4-5 Myr, instantaneous or continuous burst. Strong interstellar lines are seen superposed on the stellar profiles in the case of NGC7552. Nevertheless, the velocity shift of the wind profiles clearly indicates $M_{upp} > 40\ M_\odot$. The models for an instantaneous burst reveal an age of 4 Myr. Using these results, we can now fit the UV continuum flux. This analysis will give us, beside information about the redening, a useful prediction of the absolute number of massive stars and the number of Lyman continuum photons.

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