TESTING THE USE OF ADAPTIVE OPTICS TO REVEAL THE AGE OF DISTANT GALAXIES

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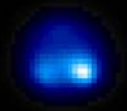
Galaxy Background

•The outside is generally blue which indicates young stars.
•The inside is red which could mean old or young and dusty.

•The galaxy is red which could mean old or young and dusty.
•The dust band can be penetrated with Adaptive Optics.

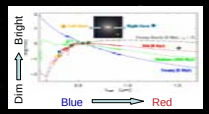
Adaptive Optics



•Adaptive Optics is a technology which utilizes a deformable mirror in order to remove the aberrations from an image caused by the atmosphere of the earth.

Hubble Space Telescope

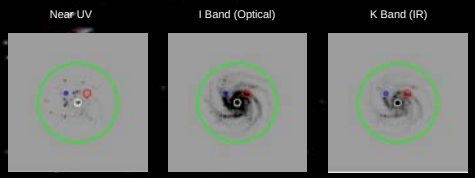
•The HST takes high resolution UV and optical images.
•The images give data which can fit different age models for the galaxy.
•A galaxy could look 10 Giga years old and really be 5 Million years old with a high dust content.



The Missing Wavelength

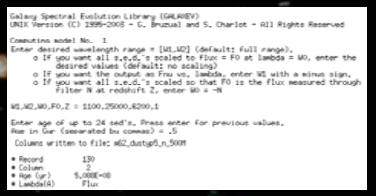
•The HST resolution in the near infrared is poor.
•Near infrared penetrates through the dust.
•We are able to see individual components of the galaxy.
•Adaptive Optics on large ground-based telescopes allows high resolution in the infrared.

Testing



•We viewed a simulated galaxy and made spectra for each of the filters used.
•We measured four different areas for their flux and wave length.

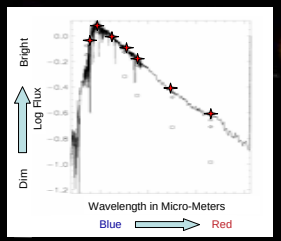
Bruzaul and Charlot's Program



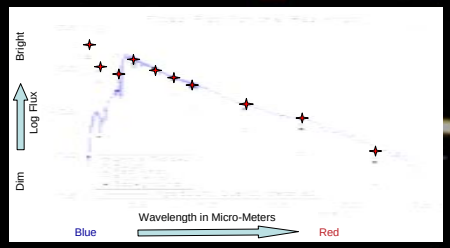
•This program allows the user to choose the dust content, bursts of star life, and how old the galaxy is.
•It then simulates the data from the specifications
•We used these graphs to fit the simulated galaxy against.

Normalizing

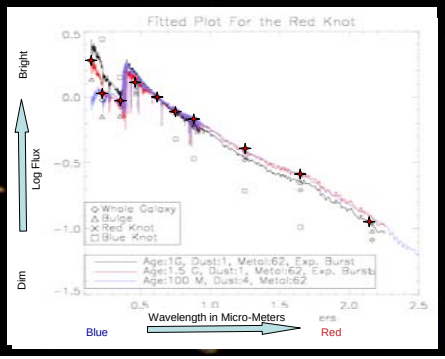
•In order to plot everything together, each component was normalized.
•To find out the age of the simulated galaxy, we over plotted onto the Bruzaul and Charlot graphs to find a fit.



Near and Far Ultraviolet



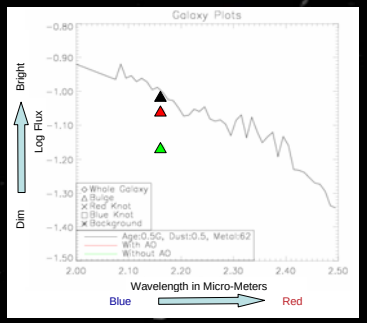
•During experimenting with Tau models for star life, the near and far UV proved essential.



Adding Adaptive Optics

•Placed galaxy into a galaxy field to add atmosphere and correct with AO.

Correction For The Bulge



Research To Come

•Adding multiple bursts to models for a better fit
•Experiment more with AO correction.

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