Resolved Stellar Populations in Nearby Galaxies

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Optical CMDs

- NGC 4068
- McQuinn et al. 2010a
- Kristen McQuinn
- Minnesota Institute for Astrophysics
Star Formation Rate... as a function of time

McQuinn et al 2010b

SFR (M\(_\odot\) yr\(^{-1}\))

Age (Myr)
Equivalent UV CMD

McQuinn et al. in prep.
NGC 4068: GALEX
Can we connect Optical and UV fluxes?

McQuinn et al. in prep.

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Can we connect Optical and UV fluxes?

McQuinn et al. in prep.

Galex Lum. / Predicted Lum.

(FUV)

NUV)

Synthetic Stellar Populations
Synthetic Stellar Spectrum

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Mismatch between SFRs

McQuinn et al. in prep.
UV Resolved Stellar Populations

Dalanton et al. 2012

PHAT Program

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Chemical Enrichment Histories

Dolphin 2002
The Importance of the UV in SED Fitting

Romaniello et al. 2002

\[ \log(F_{\lambda}/F_{\text{broad}}) \]

\[ \lambda [\AA] \]

\[ 4000 \quad 6000 \quad 8000 \]

\[ -1.5 \quad -1 \quad -0.5 \quad 0 \]

da Cunha et al. 2010

\[ \log(A_V) \]

\[ \lambda / \mu m \]

\[ 0.1 \quad 1 \quad 10 \quad 100 \quad 1000 \]

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Summary

• **Ground Truth on UV emission from stellar populations**
  – Accurately predict the UV flux from composite stellar populations
  – FUV SFRs calculated from scaling relations are too low

• **Future gains**
  – Constraints on the recent chemical enrichment of galaxies as a function of radius
  – Improved models of UV bright BHeB stars
  – Relative weights of recent vs. intermediate and old SF in galaxies