

Laying the foundations: Nature vs. Nurture

Growing Galaxies Inside-Out

Evolution of Spiral Isolated Galaxies

Application to Mergers

Continuous work

Nature vs. Nurture

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Isolated Galaxies

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Does the environment matter?

EWASS 2015

22 – 26 June

the question arises of "Nature vs. Nurture"

Nature vs. Nurture

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- In astronomy we can ask which properties of a galaxy are natural to it and which are the result of the environment in which it lives



Does the environment matter?

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the question arises of "Nature vs. Nurture"

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- Life moves faster
- No evidence of recent star formation
- All their stars are old
- External stimuli have converted all the gas into stars long ago

Does the environment matter?

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the question arises of "Nature vs. Nurture"

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- Role of the environment in the formation and evolution of galaxies
- Which properties are due to internal secular evolution and which to external influences
- Reference sample with minimum influence from the environment

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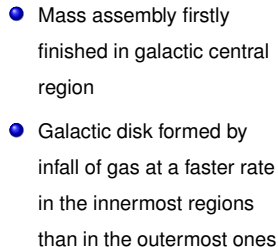
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How exactly do galaxies build their disk when they grow in isolation, unaffected by external influences?

- Isolated Galaxies
- MaNGA IFUs
- Fossil Record Method
- Chemical Evolution Models

How exactly do galaxies build their disk when they grow in isolation, unaffected by external influences?

- Isolated Galaxies

SDSS-based Isolated Galaxies (SIG, Argudo-Fernández et al. 2015)

- $d \leq 1 \text{ Mpc}$
- $|\Delta v| \leq 500 \text{ km s}^{-1}$ to avoid physical associations

- MaNGA IFUs

- Fossil Record Method

- Chemical Evolution Models

CSP models, BCO3 SSP, Solar metallicity, Salpeter IMF

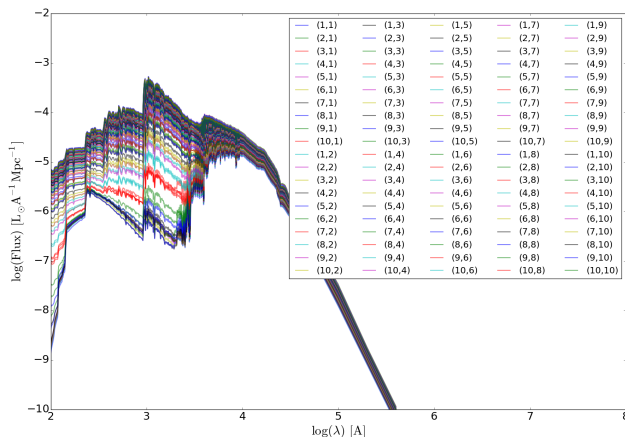
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Isolated Galaxies

Mergers

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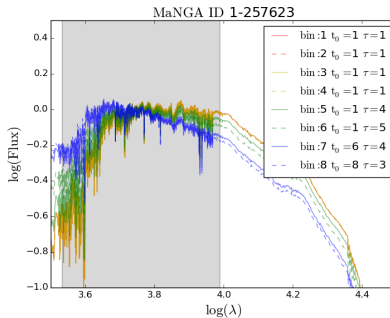
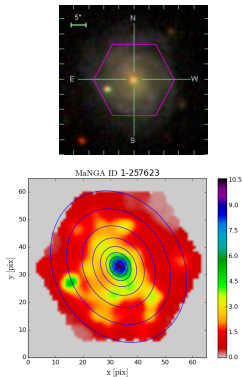
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Inside-Out

Isolated Galaxies

Mergers

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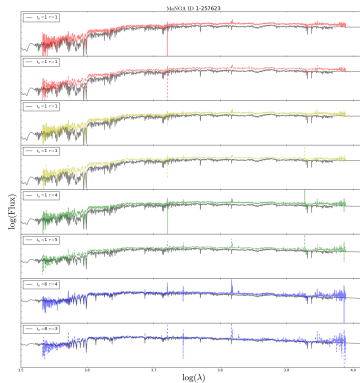
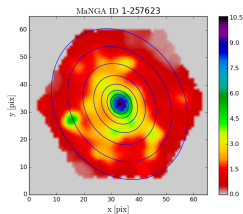
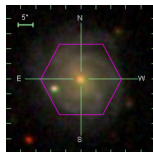
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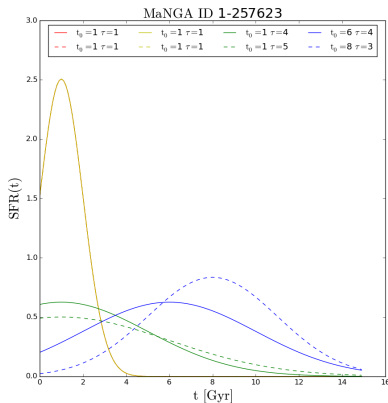
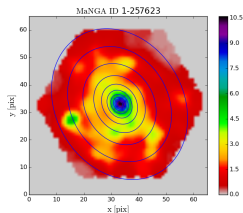
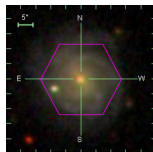
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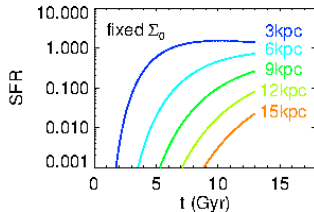
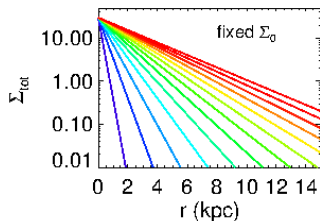
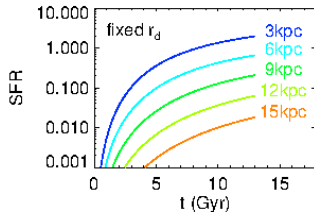
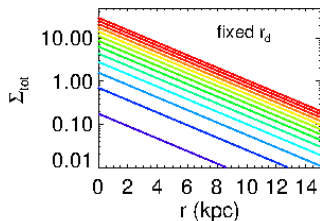
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Application to mergers: Mrk 848

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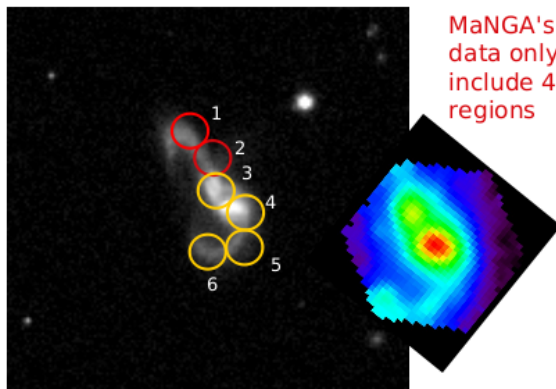
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Application to mergers: Mrk 848

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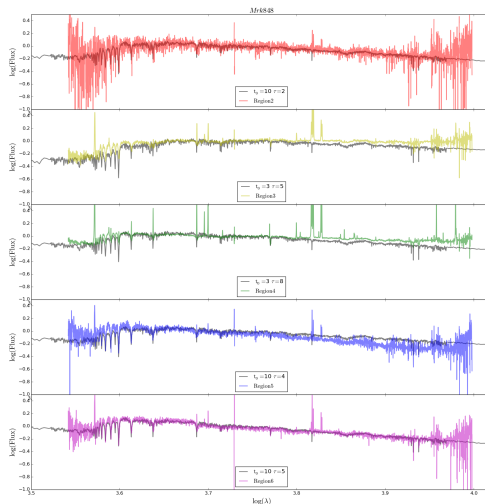
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Mergers

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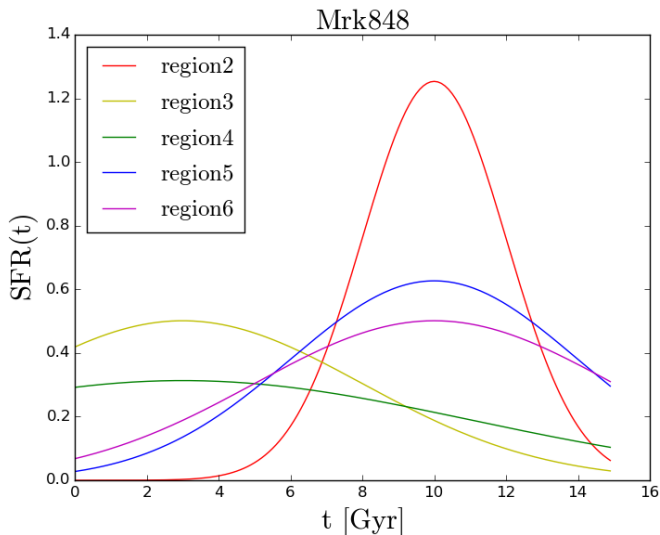
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- Isolated Galaxies in MaNGA:
~80 SIG/year, Argudo-Fernández et al. (2015)
- Follow-up MaNGA observations of close pairs/mergers:
~50 pairs/year, PI: Fangting Yuan
- Working on Spectral Fitting:
metallicity, velocity dispersion, dust extinction (emission line fitting)
- Chemical Evolution Models:
 r_d , mass assembly history (multi- λ SED modeling)

Continuous work

SDSS-based Isolated Galaxies (SIG)

[Argudo-Fernández et al. 2015]

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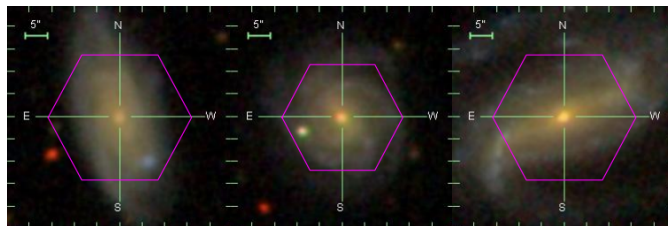
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SIG Isolation criterion:

- $d \leq 1$ Mpc
- $|\Delta v| \leq 500 \text{ km s}^{-1}$ to avoid physical associations



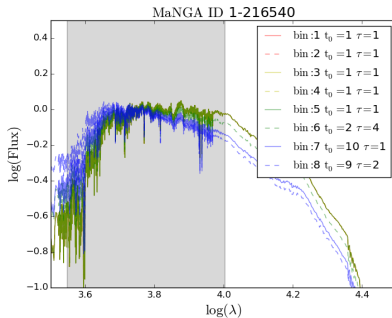
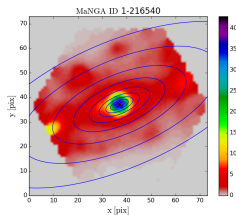
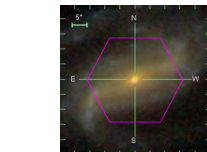
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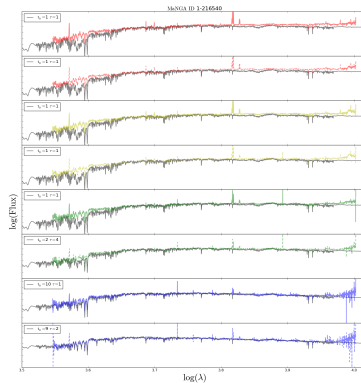
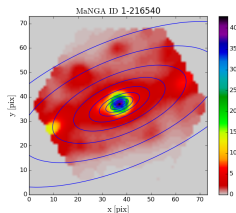
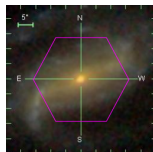
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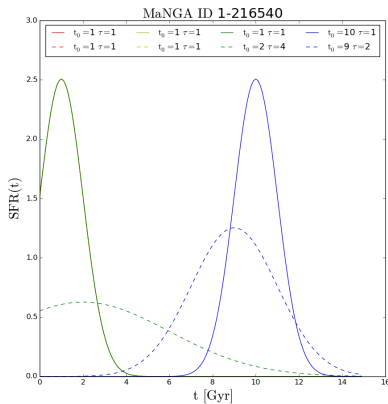
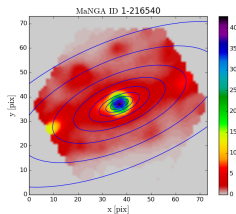
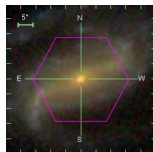
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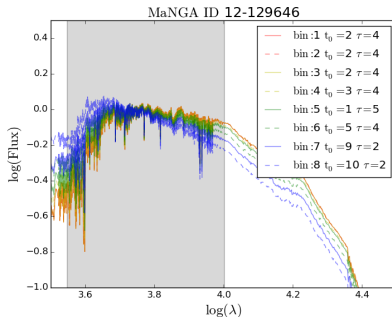
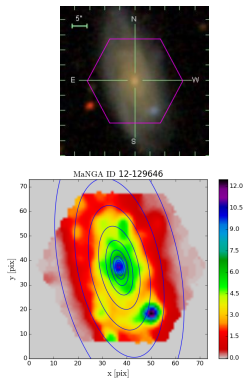
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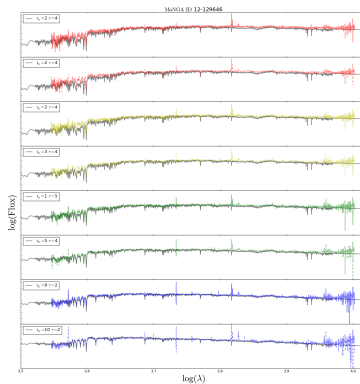
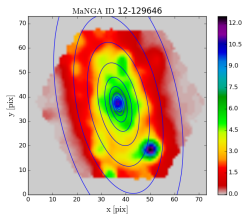
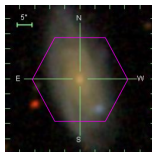
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