

SAGE

(Semi-Analytic Galaxy Evolution)

Basically the 2006 model with the following updates:

- Orphans are dead (mergers/ICS)
- Satellites are treated like centrals
- Quasar mode feedback
- Updated SF & gas (Krumholz & Dekel, HI & H2)
- Cooling core
- Separated out magnitude calculations

SAGE

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Calibration by eye:

- Primary: $z=0$ SMF
- Second: $z=0$ LFs, CMD, BTF, Z-stellar, BH-bulge
- Third: $z>0$ SMFs LFs

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Tree issues:

- (sub)halos fall off the tree
- (sub)halos belong to >1 FoF group
- Halo mass includes substructure
- Remapping to depth-first order

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- Re-built to run on any simulation
- In github and will be public this year
- Paper being written now
- Mocks publicly available through TAO

New Catalogue (Required Fields are marked with an asterisk)

Job Type General Properties Spectral Energy Distribution Mock Image Selection Output format Summary and submit

Data Selection

Catalogue geometry *

Light-Cone

Dark matter simulation *

Millennium

Galaxy model *

SAGE

Right Ascension Opening Angle (degrees) *

10

Declination Opening Angle (degrees) *

10

Redshift Min *

0

Redshift Max *

0.3

Estimated job size: 2%

☒ Unique

☐ Random

Select the number of light-cones: *

3

maximum is 3

Output properties

Output properties *

Available

Filter

Galaxy Masses
Bulge Stellar Mass
Cold Gas Mass
Hot Gas Mass
Ejected Gas Mass
Intracluster Stars Mass
Metals Total Stellar Mass
Metals Bulge Mass
Metals Cold Gas Mass
Metals Hot Gas Mass
Metals Ejected Gas Mass

Selected

>> **Galaxy Masses**
Total Stellar Mass
Black Hole Mass
> **Positions & Velocities**
Right Ascension
Declination
< Redshift (Cosmological)
<< Redshift (Observed)

Selected simulation details

Millennium

Cosmology: WMAP-1

Cosmological parameters: $\Omega_m = 0.25$,
 $\Omega_\Lambda = 0.75$, $\Omega_b = 0.045$, $\sigma_8 = 0.9$, $h = 0.73$, $n = 1$

Box size: 500 Mpc/h

Mass resolution: 8.6×10^8 Msun/h

Force resolution: 5 kpc/h

Paper: Springel et al. 2005

Selected galaxy model details

SAGE

Kind: semi-analytic model

Paper: Croton et al. 2006

Selected output property details

Black Hole Mass (10+10solMass/h)

Supermassive black hole mass

TAO

Telescope simulator

Image generation

SEDs + Filters

Light cone generation

Web form data query

Simulation database

<https://tao.asvo.org.au>