GAS PROPERTIES AND STAR FORMATION AS AN INDICATOR OF AGN ACTIVITY

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RESEARCH IS A CONTINUATION OF RESULTS FROM RICARTE ET. AL 2019

WHAT ARE AGN?

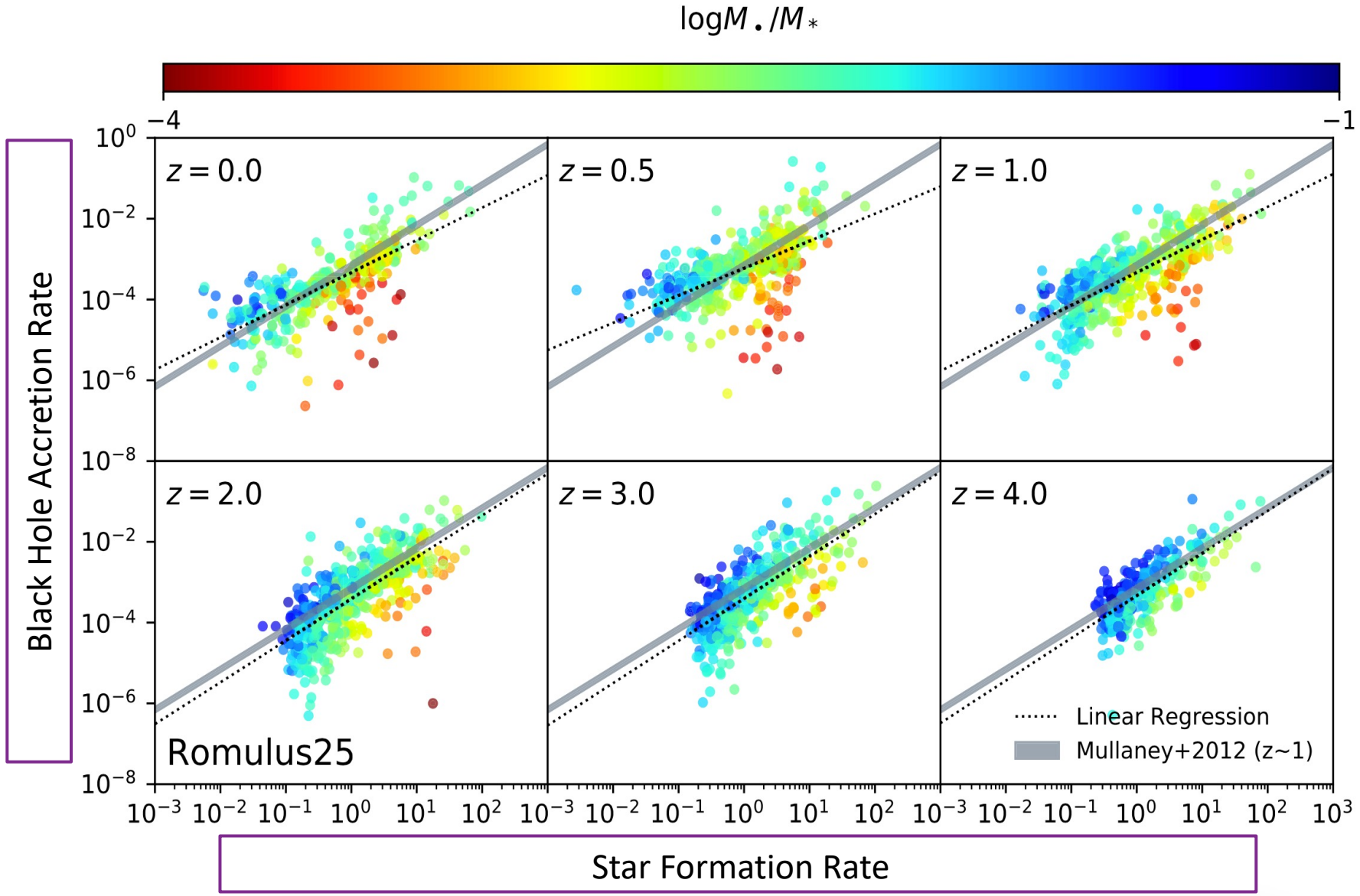
- Active Galactic Nuclei (AGN)
  - Are Super Massive Black Holes that emit energy in a large range on the electromagnetic spectrum
  - Observed as bright cores of galaxies
  - Often located at the centers of gas rich galaxies

Credit: ESO/WFI (Optical); MPIfR/ESO/APEX/A. Weiss et al. (Submillimetre); NASA/CXC/CfA/R. Kraft et al. (X-ray)

TRACKING GALAXY PROPERTIES OVER THE AGE OF THE UNIVERSE

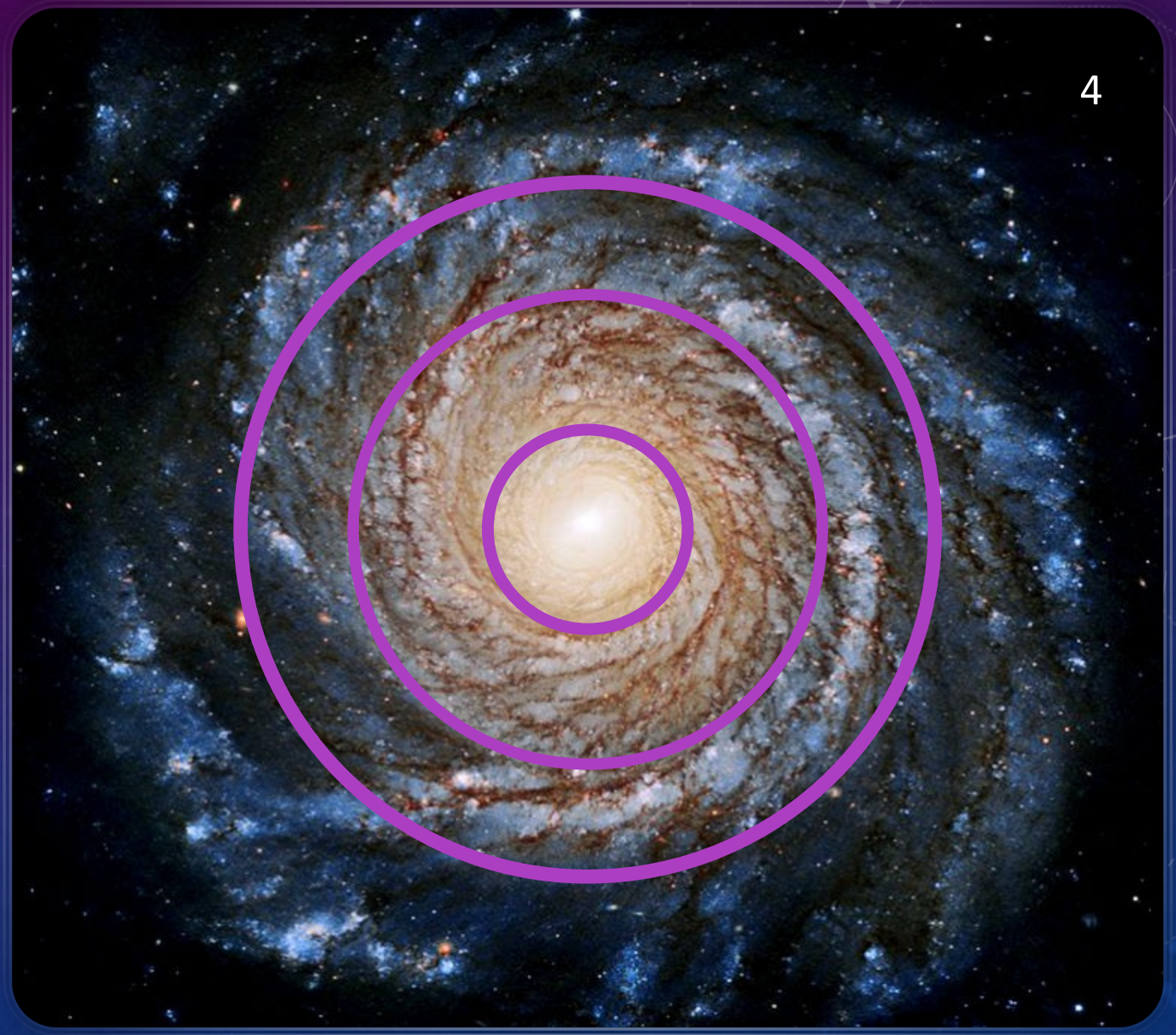
- Cosmological simulations of galaxies from redshift z = 20.0 to z=0.0 (t = 0.18 Gyr – 13.8 Gyr)
- N-Body + SPH simulations
  - Stellar and Dark Matter evolution under gravity
  - Gas through hydrodynamics
- ROMULUS Simulations
  - ROMULUS C: Simulation of a galaxy cluster
  - ROMULUS 25: simulation of a 25 Mpc patch of the Universe – includes satellite + field galaxies but my research will focus on field galaxies

RICARTE ET. AL 2019 FOUND A TIGHT CORRELATION BETWEEN STAR FORMATION AND BLACK HOLE ACCRETION RATES



AT WHAT SCALE DO THE PROPERTIES OF GALAXIES MATTER TO BLACK HOLE ACCRETION RATE?

- Star Formation Rate and Gas Properties as a function of radius from the center of the halo
- Gas Properties Being Investigated
  - Gas fraction, Cool gas fraction, HI gas fraction



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