Global Properties and Formation Scenarios

Session 6

Introduction by M. Fall

Assembly

- Merging vs accretion
  lumpy or smooth
- Hot vs cold accretion
  importance of shocks
- Hierarchy vs something else
  massive old E galaxies at high z
- Disk vs spheroid
  physics of morphology
- Disk-halo conspiracy
  $Vc(R) \sim$ constant

Feedback

- How important is it in the mass, energy, and metal budgets of galaxies? (more for low-*M* galaxies?)
- Is it driven by stars, AGN, or something else? (stars for low-M galaxies, AGN for high-*M* galaxies?)
- How does it couple to the ISM of galaxies? (dependence on opacity and small-scale, multi-phase structure of the ISM?)
- How does it affect galaxy assembly? (regulation or just removal?)

Star Formation

- SFR = *fn (*mass of gas,…., other variables?*)*
- Burst vs quiescent: different modes of SF or just different rates?
- Tightness of dMs/dt vs Mg (Schmidt-Kennicutt) relation
- Similarity of star and star cluster formation in interacting and normal galaxies
- What causes “downsizing” (more recent SF in low-*M* galaxies):

AGN

- What causes the tight BH-bulge relations?
- Is the influence BH_bulge or bulge_BH?
- When were these connections established?

Scaling Relations

- V-R-C-Z-L relations and projections
- When were they established?
- How do they evolve? (slowly z = 0_1?)
- Ancestor/descendant problem (LBGs, sub-mm sources, etc)
- Comparisons with models
- Bimodality: critical feature or wrinkle?
- Evolution in number, masses, sizes of galaxies