

Galaxy Mergers

ASTR 1220, Summer 2010

29 July 2010

Outline

4 paragraphs in Bennett Chapter 21

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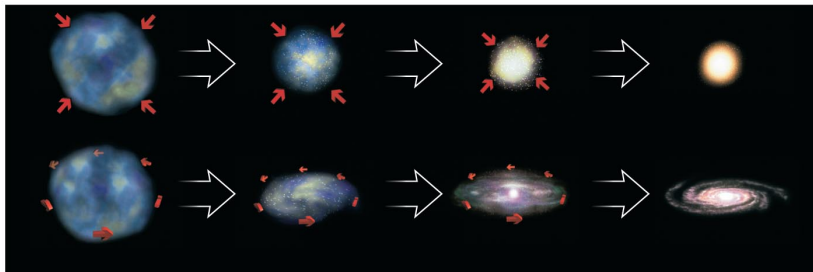
Galaxy Formation in Isolation

Galaxy Mergers

History

Simulations

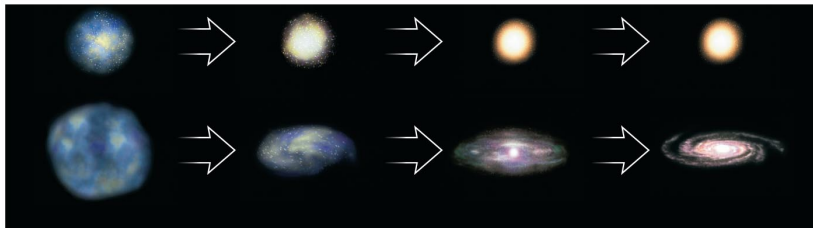
Angular Momentum (Rotation)



a The angular momentum of a protogalactic cloud may determine whether it ends up spiral or elliptical.

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Density



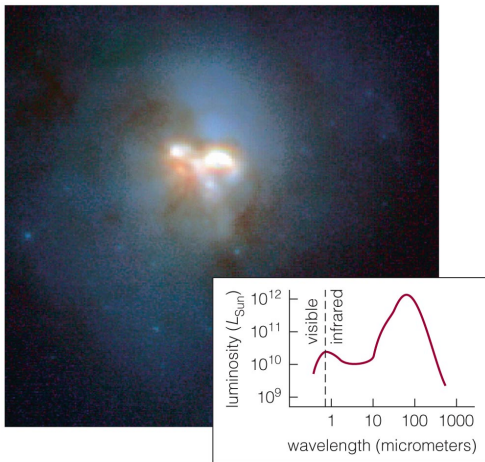
b The density of a protogalactic cloud may determine whether it ends up spiral or elliptical.

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Star Formation in Mergers



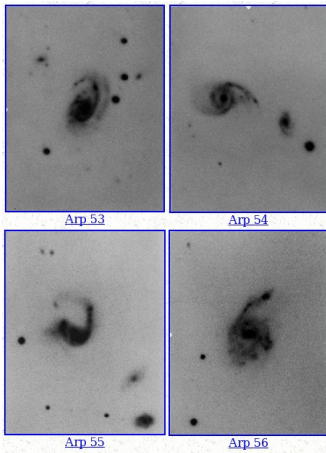
Embedded Star Formation



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Arp's Atlas of Peculiar Galaxies

Arp Atlas



Toomre & Toomre

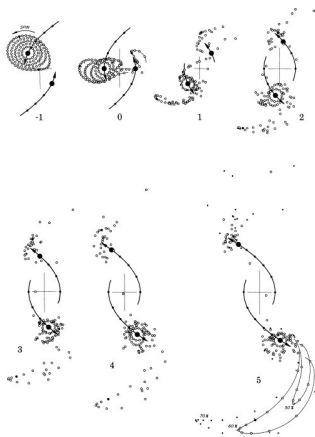
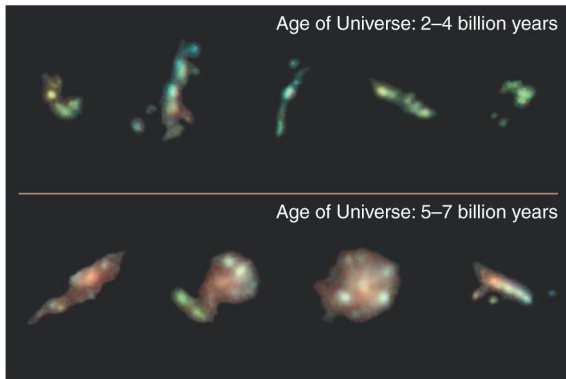


FIG. 2.—A flat direct ($i = 0^\circ$) parabolic passage of a companion of equal mass

Early Universe



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HST images of galaxies in the early Universe, suggesting mergers were much more common.

Star Formation in Mergers

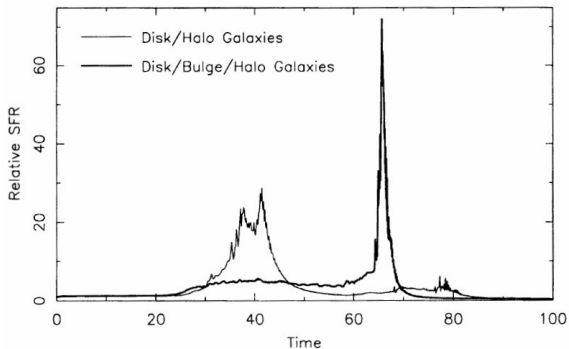
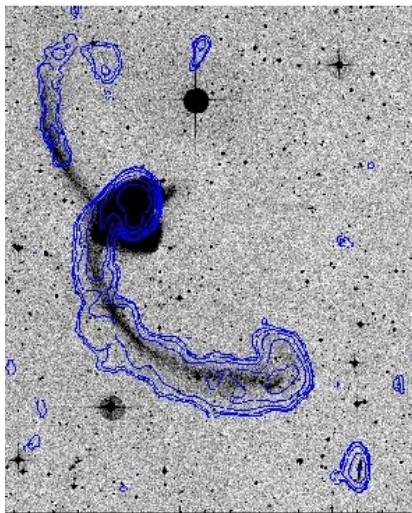


FIG. 2.—Evolution of the global star-formation rate in galaxy merger events.

Movies!

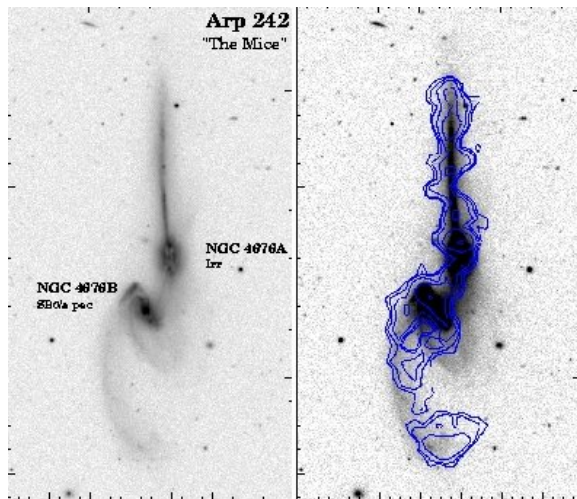
- ▶ Galaxy merger simulation
- ▶ matching simulations to observations

Modeling Mergers



HI and optical observations of the Antennae. From J. Hibbard's HI Rogues gallery.

Modeling Mergers



HI and optical observations of the Mice. From J. Hibbard's HI Rogues gallery.

Preview - Active Galactic Nuclei

Galaxy merger with black holes (Under “Movies” link).