



# 3D Radiation-SPH Simulation on Galaxy Formation

## Cosmic History

**Big Bang**

$10^{-44}$  sec

Cosmic  
Recombination

0.1 Myr

Cosmic  
Reionization

0.5 Gyr

Galaxy Formation

2 Gyr

Birth of SUN

10 Gyr

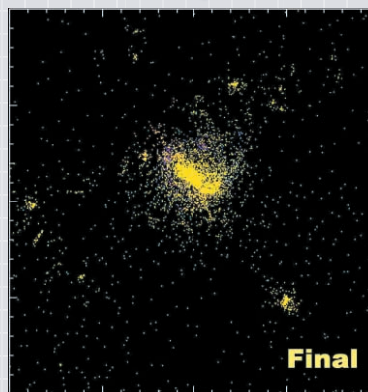
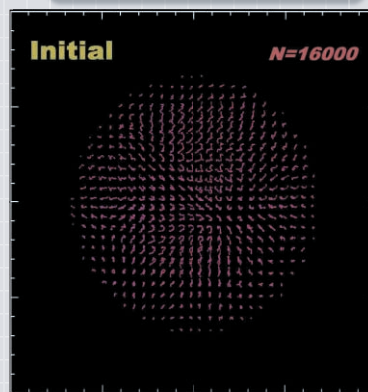
15 Gyr  
(Present Day)

Galaxy Formation is simulated in weak or strong UV background radiation with HMCS

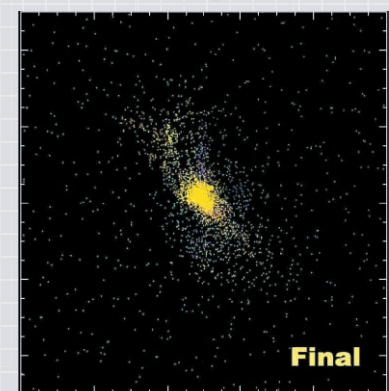
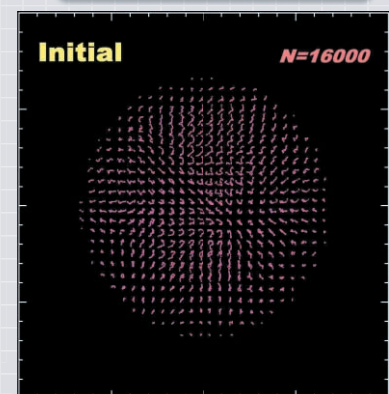
Results depends on UV intensity !

- Weak UV allows stars to form quickly. Resultantly, elliptical galaxies are born.
- Strong UV retards star formation. Eventually, spiral galaxies forms.

## Weak UV case



## Strong UV case



yellow dots = stars, blue dots = ionized gas, pink dots = cold gas