

Table 3: Evidence against steady state models

1. No galaxies older than 18 billion years may be found in our vicinity
2. No galaxies younger than 14 billion years may be found in our vicinity.
3. The lack of red shifts beyond $z = 4$ implies a limit for the universe much less than what would be expected for an infinite steady state universe.
4. Steady state models incorporate no physical mechanism (such as the primeval explosion) to drive the observed expansion of the universe.
5. The microwave background radiation is perfectly explained by the cooling off of the primordial fireball but has no explanation if the universe is steady state.
6. The huge entropy of the universe defies explanation unless the universe began with some kind of big bang.
7. The gravitational force and gravitational potential for all points in space becomes indefinite for an infinite steady state universe.
8. The measured helium abundance for the universe has exactly the value that the big bang would predict. In a steady state universe the created matter must have a specified ratio of helium to hydrogen, and that ratio must decrease with respect to time in an entirely ad hoc manner.
9. The abundances of deuterium, light helium, and lithium in the universe are predicted as consequences of the big bang. These abundances have no physical explanation in a steady state universe.
10. Galaxies and quasars of distances so great that we are viewing them from the remote past appear to differ substantially in character and distribution from nearby, more contemporary, galaxies and quasars.