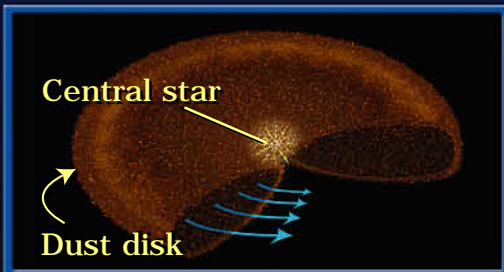
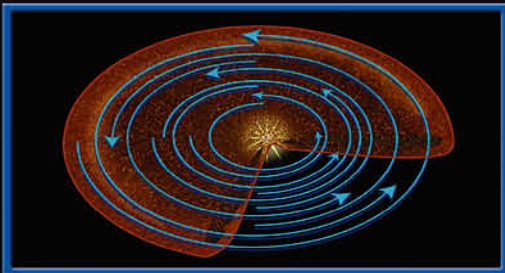


TWO PLANET FORMATION SCENARIOS

Accretion model



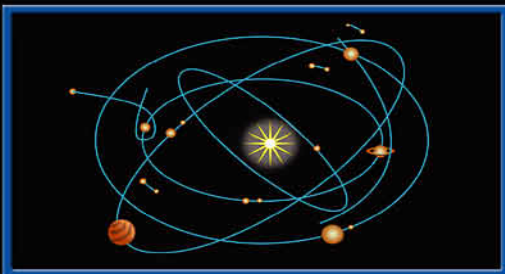
Orbiting dust grains accrete into "planetesimals" through nongravitational forces.



Planetesimals grow, moving in near-coplanar orbits, to form "planetary embryos."

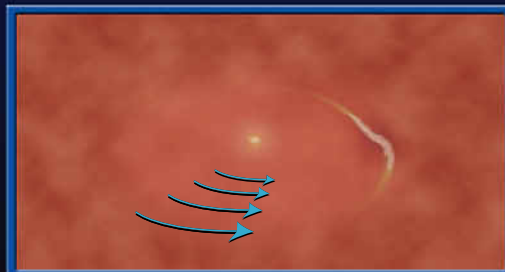


Gas-giant planets accrete gas envelopes before disk gas disappears.



Gas-giant planets scatter or accrete remaining planetesimals and embryos.

Gas-collapse model



A protoplanetary disk of gas and dust forms around a young star.



Gravitational disk instabilities form a clump of gas that becomes a self-gravitating planet.



Dust grains coagulate and sediment to the center of the protoplanet, forming a core.



The planet sweeps out a wide gap as it continues to feed on gas in the disk.