Multibang Dynamics

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In the multibang (MB) model, the cosmos is an extreme black hole from which nothing can escape, no particle, no photon, no gravity, nothing at all. It is also a perfect blackbody, the ultimate one, a cavity in thermodynamic equilibrium at 2.725 K, the cosmic microwave background (CMB). The cosmos is permanent with a constant density of 0.21 Mp/m3 and a radius of 143 billion light-years, equivalent to z=10. It is in equilibrium between the pull of gravity and bubbles expansion representing the cosmological constant lambda. No mythical birth, no inflation, no cosmic size expansion and no death.

Observed Doppler redshifts are associated with proper rotations; or bubbles in expansion, the sum of which adds up to the total redshift and gives an evaluation of distances for large redshift values; spaces with blueshifts or no redshifts are accounted for and included: $z=\Sigma_{ni=1}V_i/c$ where V_i is bubble expansion velocity and c is light speed. For a single bubble: $z=\Delta r/r$, the change in radius.

In the MB model, the cosmos always has a constant ratio of different elements, the same average temperature and density, but every expanding bubble is born from an extreme black hole (quasar) in a high-temperature and high-density maxibang implosion-explosion that has its own age and history, representing, for example, about 13.8 billion years expansion for our northern bubble in which the Milky Way is embedded.

At high temperature and density after every local maxibang events, a reaction called baryogenesis must occur that violates the equilibrium between matter and antimatter, leaving an excess of quarks and leptons that we call matter. Within the first second, protons, neutrons, and electrons are formed and dominated by photons. Then within a few minutes of expansion and at a temperature of about one billion K, a process called nucleosynthesis leaves most of the basic elements in place, including 92% of hydrogen nuclei, 8% of ionized helium, and a small amount of deuterium and lithium. No dark matter and dark energy, all mass-energy is expected in the form of baryonic matter (fermions and bosons of the Standard Model). Free photons are constantly emitted by newly born bubbles and mixed with the dominant photonic background from all other sources which, after a long redshifting trip across the cosmos, becomes the CMB peak up to 218 GHz from an inverse Compton scattering traffic jam.

Doppler disk velocities are combined to corrected attraction radiuses to calculate exact galactic masses. Corrected vector velocities explain the natural spirals and bars in galaxies, how stars are moving down the spiral arms until reaching a circular orbit and then building up bars on both sides of the central core and bulge. A dynamic model of continuous galactic formation in the walls between bubbles and migration to clusters explains the high velocities encountered in cluster suburbs.

The naturally larger z distances found in the MB model explain the lower brightness found in high z supernovae Ia surveys. The luminosity-distance curve calculated from supernovae Ia directly corresponds to the MB time-distance model. So, supernovae Ia are true and reliable standard candles for cosmic distances. Larger distances can also explain excess mass evaluations (pseudo-dark matter) from gravitational lensing effects in faraway galaxy clusters. Energy decreases as $1/(1+z)^2$ (Tolman test), the inverse square law for both supernovae Ia and quasars. Large distances vary directly with redshift z.