A Cosmology Model Based on ±Mass Symmetry

16 January 2015

Robert M. Hartranft, Simsbury CT 06070, rmhartranft@gmail.com
Scott W. Hartranft

Abstract: Just as the universe contains balanced positive and negative electric charges and balanced north and south magnetic poles, so it also has balanced amounts of positive and negative mass-energy. Understanding this allows consistent and natural explanations for the birth, early behavior, growth, present appearance, and future of the universe. Cosmic inflation and dark energy, while intellectually clever, are unnecessary and non-existent in the real universe.

The universe is deeply symmetric: equal amounts of positive and negative electric charge; north and south magnetic poles; clockwise and counter-clockwise motion; etc.; with zero net for the universe overall. In 1930, British physicist P.A.M. Dirac famously observed that the electromagnetic equations are charge symmetric. This was quickly followed by discovery of the positron and ultimately by the entire family of anti-matter particles.

We note here that the three fundamental equations for mass,

$F = ma$	Inertia
$F = Gm_1m_2/r^2$	Gravity
$E = mc^2$	Relativity

are symmetric for positive and negative values of m. This suggests a family of negative mass particles ("unmatter" hereafter), with zero net mass-energy for the universe overall. The positive m matter gravitationally attracts positive m matter, and negative attracts negative, but positive repels negative.

The Big Bang creation event would therefore require zero net mass-energy, and would produce two precisely concentric, inter-meshed, expanding spheres, one of positive m matter, the other of negative m unmatter. After expanding at light speed for an hour, each sphere could hold 10^81 nucleons, which is one estimate of the number of atoms in the visible universe.

Note that the universe was at this stage, had always been, and will always be zero net mass, zero net magnetic poles, zero net rotation, etc. To this instant it would therefore have had zero net gravitational and electromagnetic forces, just short-range nuclear forces. In consequence, the universe would look identical everywhere except at the outermost layer. As this diameter was passed, however, the structure would begin to disassemble at virtually every nucleon diameter.

After 7.2 years, the spheres would have sufficient volume for 10^81 hydrogen atoms. They would repel and segregate at myriad local sites, providing the heretofore puzzling early cosmic anisotropy and galactic spins. They also formed the birth areas for an immense number of large, short-lived stars, which in turn provided the observed immense number of black holes.

As the spheres expanded to their current, roughly 28 billion light-year diameters, they became progressively more segregated, leading to apparently huge voids if only one sphere is considered. As segregation increased, the unbalanced local forces increased, leading to the observed and heretofore exceedingly puzzling accelerating expansion.

Looking for locations in a sky map where unphotons from an ungalaxy have cancelled the positive energy photon "mist" should work. A direct imaging camera may also work. The detector pixel could be supplied electrons at elevated energy. Any transitions to ground state without photon emission would hopefully be mostly from unphoton absorption. The lens would be just a drilled block of the same material held at the elevated energy.

Comparison: current models vs. this model

1. In current models, the universe begins with the creation of an immense amount of mass-energy, which is an immense violation of known physical law.

2. The universe then undergoes "cosmic inflation", which is another immense violation and precariously close to "physics magic".

3. Large explosions ordinarily produce highly uniform results in empty spaces: the sphere from an H bomb in air, for example. But the visible universe is now very lumpy, with voids up to one billion light years across after only 14 billion years of expansion. This seems to have started immediately as "early anisotropy".

4. Citing “dark energy” to explain accelerating expansion is undisguised physics magic.

5. In most non-quantum field models, black holes collapse into singularities with unique properties.

By contrast, in the model proposed here:

1. The net mass-energy of the universe is, always will be, and always was zero, including before and during the Big Bang.

2. There is no need for contrivances like cosmic inflation or dark energy: invariant laws account for the known history of the universe.

3. There are no “worm holes” or other cosmic shortcuts: the speed of light limitation applies everywhere and always.

4. Black holes are not singularities, but merely regions of particularly intense gravity. The laws of physics are the same inside, outside, and at the boundary.