# Uniformity in a Finite Universe

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## Abstract

A finite universe that was uniform, homogeneous and isotropic at the largest scale, would exhibit a distinct visual pattern of galaxies arrayed across the sky that would confirm its finiteness. It'd have fewer galaxies when looking outward toward its perimeter and more galaxies when looking in the opposite direction inward toward its interior. But we don't see it. If it was expanding, cosmological redshift would correlate with the pattern. We don't see that either. This simple, obvious, undeniable fact of basic three-dimensional geometry by itself completely undermines big bang orthodoxy. But it remains unrecognized.

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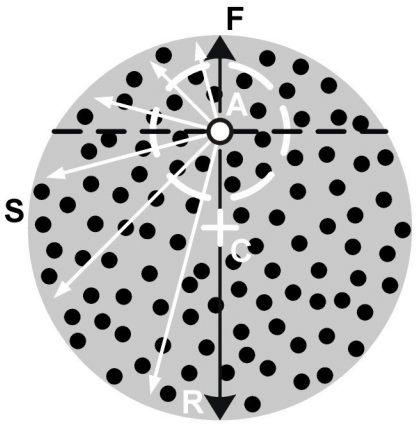
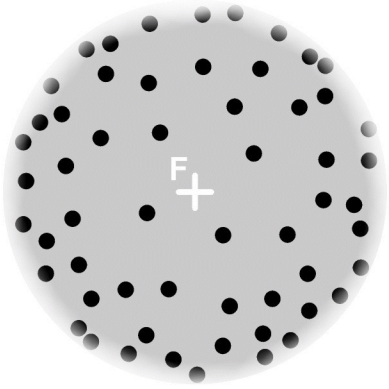
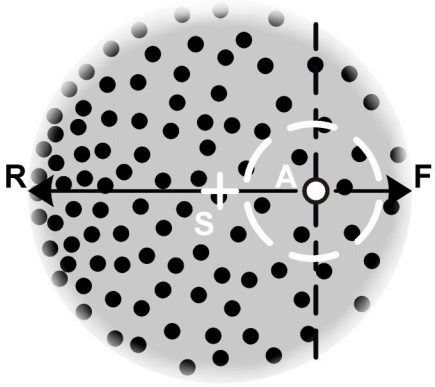


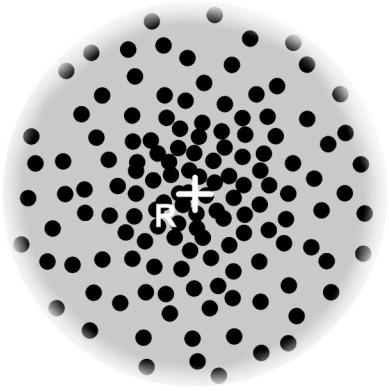

1. TOP-DN SECTION VIEW




2. FORWARD VIEW




3. LEFT SIDE VIEW



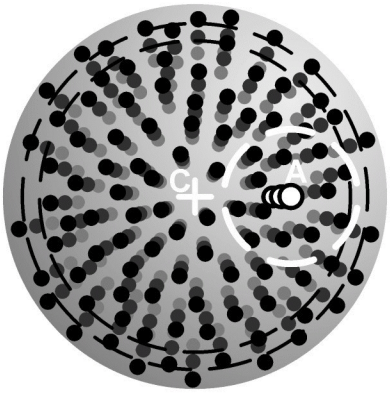

4. REAR VIEW

## Observation

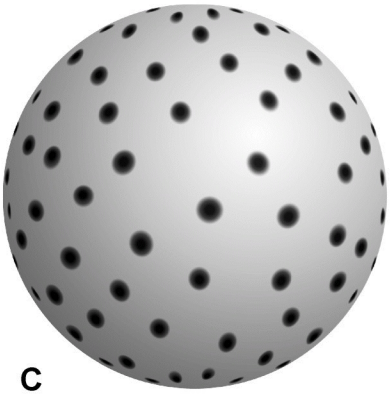
If we start with the assumption that our universe is finite and it's expanding and that it can express uniformly, which in reality isn't physically possible for a three-dimensional spherical volume. (See platonic shapes: tetrahedron, octahedron, and icosahedron where the legs of uniformly distributed equilateral triangles around a sphere's surface are always longer than the sphere's radius [1]. Use **[Alt][←]** to return.) But let's go ahead and assume it anyway for the sake of argument because uniformity is what we observe at the largest scale.

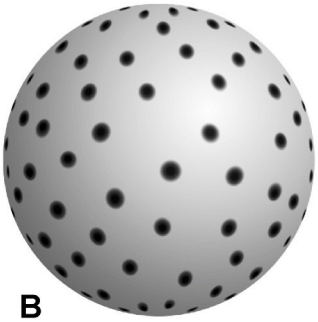
If we also assume that we didn't end up by chance at the universe's exact center at **C**, in diagrams **1** on the next page that portrays a top-down section view through our universe, but were located for convenience at **A**, about halfway between it and the universe's expanding perimeter at **F**. Then we'd see a condensing, two-dimensional array of galaxies spread across the entire sky, represented by the black dots beginning in diagram **2**, that was least dense in the direction of our outward-bound direction of travel toward **F** where the universe's perimeter would be its closest. That's where the fewest number of galaxies would be.

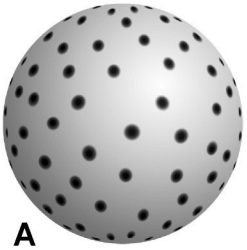
If we were to sweep around from **F**'s forward-looking view through **S**'s left side view, diagram **3**, and look to our rear in the direction of **R**, diagram **4**, as suggested by the sequence of smaller white




**5. RADIAL EXPANSION IN THREE DIMENSIONS**




**6. UNIFORM EXPANSION IN TWO DIMENSIONS**

arrows in diagram **1**, the visual two-dimensional density of galaxies across the entire sky would be progressively increasing, peaking exactly opposite our outward-bound direction of travel in the direction of **R** through the universe's origin at **C**, as depicted in diagram **4**. That's the direction where we'd find the greatest number of galaxies. We'd see this same pattern whether our presumed finite, uniform universe was expanding or not.

If our universe was diffusing with expansion and condensing from gravity as it'd have to be if it were actually finite because of a sphere's innate geometry that includes the inverse square law [2], it'd still express the same array of galaxies across the sky. It'd just be more exaggerated, more dispersed in the forward direction, **F**, and more condensed in the rearward direction, **R**.

Applying cosmological redshift to galaxies from the universe's assumed stretching/expansion, whether it was uniform or diffusing and condensing, we'd get an exact correlation to the pattern. The highest redshift would be directly opposite our direction of travel where the galaxies would be at their farthest and densest and be receding the fastest. And the lowest redshift would be in front of us in the direction of our travel where the fewest, closest, slowest receding galaxies would be.

What we actually see though is a uniform, homogeneous/isotropic distribution of galaxies and their redshifts. This also explicitly indicates an infinitely vast and ageless cosmos where cosmological redshift originates from a source other than universal stretching/expansion.

Arguing that there must exist a visible horizon that limits our view to a certain distance, indicated by the white dashed circle around our position at **A** in diagrams **1**, **3**, and **5**, where all we can see is uniformity doesn't work. Even if we set aside a three-dimensional spherical volume's inherent inability to ever express uniformly, the inverse square law's exponential diffusion, or condensing, from expansion, or contraction, ensures its radial expansion, as portrayed in diagram **5**. It can never expand uniformly in three dimensions. So its dispersion would be easily perceivable whatever our location in the universe.

The only way to maintain uniformity is theoretically with Einstein's curving non-Euclidean, finite yet somehow unbounded universe. With expansion, it's become the big bang [3]. It expresses two-dimensionally like the surface of a sphere so its galaxy's can remain uniformly distributed as it expands, as depicted by the sequence **A**, **B**, **C** in diagram **6** [4]. But there's no existence in two dimensions. Two dimensions can only define the location of a plane [5]. So it doesn't work either. We're still left with an infinitely vast, ageless universe that requires a practical explanation for cosmological redshift.

## Conclusion

The inherent properties of a theoretically finite, uniform, expanding universe that was actually three-dimensional would decisively confirm its expansion and finiteness by clearly revealing an array of all galaxies that visually condensed across the entire sky that'd also establish the direction of the universe's origin. The fact that we don't see even a hint of any of this clearly indicates that the big bang is a fallacy and that cosmological redshift and cosmic microwave background radiation must originate from a source other than universal stretching/expansion and its primordial conditions.

## Declarations

The author certifies that he did not receive any funding, grants, or any type of support from any individual, institution, or organization in the connection with the study or preparation of this work. The author further certifies that he does not have any financial or competing interests in connection with this work or ties of any kind to any individual or organization that might.

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[1] "Platonic solid," Wikipedia: The Free Encyclopedia, last modified Apr 24, 2023, http://en.wikipedia/wiki/Platonic_solid.

[2] I or D  $1/r^2$: Intensity, I, at the surface of a sphere, which is the same as density, D, is proportional to the inverse of the square of its radius; "Inverse-square law," Wikipedia, last modified Dec 13, 2022, https://en.wikipedia.org/wiki/Inverse-square_law.

[3] "The Big Bang," NASA Science, last updated Aug 26, 2023, https://science.nasa.gov/astrophysics/focus-areas/what-powered-the-big-bang.

[4] Albert Einstein, *Relativity: The Special and the General Theory*, 15th ed. Translated by Robert W. Lawson (New York: Three Rivers Press, 1961), 122-127.

[5] Weisstein, Eric W. "Sphere." From MathWorld--A Wolfram Web Resource, last updated Aug 25, 2023, https://mathworld.wolfram.com/Sphere.html.

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