

## THE COMING UNIVERSE

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In the disinterest of the media and of scientific communicators, the expansion of the universe cohabits with its observational falsification. The evidence, which emerged accidentally from systematic surveys in the ultraviolet range searching for “primeval objects with high redshift”, has revealed a great number of galaxies with blueshifted optical spectra.

Their quantity (NASA’s NED 1 database currently lists 8060 extragalactic objects with a blueshift), quality (almost all morphological types, including disc, elliptical and peculiar galaxies, etc.) and distribution in the sky (even in opposite regions) make this unexpected multitude the most embarrassing violation of celestial fundamentals since the earliest times of the discovery of sunspots.

The redshift/distance relationship is empirically contradicted on a large scale: if the blueshifts observed all have a Doppler origin, then we must in fact be dealing with thousands – or more probably millions – of galaxies all moving towards the Earth from various heavenly directions! And for the blueshifts to be the result of a “true” Doppler effect, and not of other phenomena still to be understood, the implication is that they are all “proximal” galaxies, fairly close to us. Otherwise the universe is not expanding.

But where do we put them? At the distance of our neighbouring Virgo Cluster, a densely populated mass with over 2500 member galaxies, an ordinary galaxy could show spectral blueshifts only if it were under the effect of an approaching motion (or a sum of simultaneous relative movements producing the same result) greater than 1000 kilometres per second, which is the average recession speed assigned to the cluster itself. It can easily be understood that for significant blueshifts to be produced in more distant clusters, for example with recession velocity of 10,000/20,000/30,000 km/sec, the sources in question would need to generate high-speed luminous gas emissions, or immense and extremely elongated plasma jets directed with great accuracy towards the Earth. Or otherwise they must be effectively moving towards us at amazing “negative speeds” of at least 10,000/20,000/30,000 km/sec, and so on.

The great majority of the “rebel” galaxies listed in the NED have “negative speeds” ranging up to around a few hundred kilometres per second, but there are also an impressive number of objects with blueshifts equivalent to -1,000, -2,000, -5,516, -

7,530, -7,585, -8,144, -8,624, -27,791, -34,000, -41,000, -41,941, -51,654, -52,434, -53,429, -55,116, -56,061, -56,213, -56,781, -60,228, -61,278, -66,044, -68,892, -69,642, -70,181, -74,349, -75,038, -75,907, -79,985 or -80,484 kilometres per second... on a collision course with the “law” that for almost 90 years has governed our most celebrated conception of cosmic structure. Since it seems unlikely that a host of nearby galaxies are stretching out so many accusing fingers towards the Earth, and in some cases at speeds of over -80,000 km/sec, what we have finally is generalized evidence of spectral shifts independent of distance and speed. Or as an alternative, that the “Big Crunch” has started, and that we’ve temporarily moved back to the centre of a Ptolemaic universe collapsing all around us. Another funny possibility is that the thousands of blueshifted galaxies all have super-massive black holes, accidentally expelled precisely in our direction.

“Intrinsic” shift, taken to be a state of matter in which energy transitions are effectively produced at the wavelengths and frequencies observed, has always been the barred door of conventional astrophysics, because it requires a new branch of physics that we are asked to confirm without any kind of preliminary theoretical juggling. Adopted by the astronomer Halton Arp as the only plausible explanation for the innumerable associations of objects with highly discordant redshifts (“anomalous redshifts”), and therefore as the proof of the continuous creation and physical linking of quasars to galaxies, the rigorous formulation of this intrinsic effect lies in the resonance theory of Hoyle and Narlikar (“Action at a Distance”, 1974), also known as the “variable mass hypothesis”. The mass of particles appears to be a direct function of position and time: in the most general terms, the spectral details of younger cosmic matter would seem to be systematically shifted towards low frequencies and high wavelengths (redshift), while those of matter that has “resonated” for longer in the cosmic environment – “older” matter – modulate emissions towards progressively shorter wavelengths and higher frequencies (blueshift).

Sadly, even this theory does not escape unscathed from that “unexpected multitude”, which some have already called “the blue salmon of cosmology”. Intrinsic redshift has always been correlated by the “heretics” to the young age of matter, but here we must take into consideration a variety of 8000 systems that include ordinary spirals, elliptical ones, radio galaxies and pointlike objects, sometimes exhibiting the unmistakable broad and compact emission lines of Seyfert galaxies, with active galactic

nuclei... If we knew nothing of Hubble's relation or expanding space, we could be led to believe that we're looking at AGNs and quasars with blueshifts!

It is worth remembering that some particular variable galaxies (blazars) are known for these contradictory characteristics, but it is no secret of scientific literature that a growing number of quasars with high redshift emissions show absorption lines with moderate blueshifts (usually in the order of a thousand kilometres per second). It is plainly impossible to explain these changes from positive to negative with interposed clouds of hydrogen aligned precisely on our sightline and moving towards us at very high speed: either the Doppler or "pseudo-Doppler effects" of the external galaxies are negligible, and all shifts both positive and negative are generally independent of distance and speed, or the expansion of space has already passed inadvertently through its instrumental confutation.

The list of the 8000 galaxies is shown below as it appears in the NASA Extragalactic Database. It probably represents only a small fraction of the overall number of objects with "negative speed" that could potentially be identified in the celestial sphere. Beyond the question of the "true" Doppler and the consequent relative motions, which could only with difficulty exceed +/-300 km/sec, even in a static universe, but that would be inexorably "scrubbed out" with the increasing distance of an expanding measurement scale, these spectral shifts must be to a great extent intrinsic, regardless of the cosmological model adopted. This opens up scenarios that call for new physics, new chemistry and the toppling of old paradigms. Every galaxy clearly has its own light, its own isotopes and its own specific spectral details: this is precisely what Jesse Greenstein and Maarten Schmidt feared so greatly and what Halton Arp and a few others suggested fifty years ago, just after quasars were discovered in 1963.

That's not bad for a "hopeless rearguard action".

A.B.