11

Big Bang

Cosmologists have collected evidence that clearly shows the universe came into existence in a big bang event, about 14 billion years ago.

It originated from an infinitely dense point – singularity – and prior to that explosive event space–time did not exist.

This model supports the cosmological principle, which asserts that on a large scale the distribution of matter and radiation in the universe is uniform. The reasoning follows on from the argument that the universe expanded from a small point. So how galaxies formed in this smoothly expanding universe remains a mystery.

Wisp theory proposes that the collapse of a spinning ultra-supermassive black hole created a big bang event that formed the current universe. And prior to that, the black hole had been steadily growing, feeding on an expired universe.

11.1 Black holes

11.1.1 General relativity

Einstein's general theory of relativity predicts the existence of black holes whose masses are concentrated into infinitely dense points – singularities.

Wisp theory suggests that at the centre of a black hole is zero-state space – 'nothingness'. The mass that makes the black hole so formidable lies outside its zero-state sphere's surface, basically a black hole is an enormous matter-fractal.

Both theories support the notion that curved space causes gravitation. However, whereas general relativity describes this as a distortion in the four dimensions of space and time, wisp theory attributes it to three dimensions of space only.

Figure 11.1 shows a quasar – quasi-stellar source, which is powered by a spinning supermassive black hole. (Quasars are tiny, but they are the most luminous objects in the universe – giving off as much energy as a thousand billion suns.)

The black hole is completely invisible, a tiny speck located at the centre of the glowing accretion disc, and it emits powerful gamma ray bursts – jets that travel at near light speed – from its poles.

In its dormant state (non-feeding) the black hole is practically undetectable.

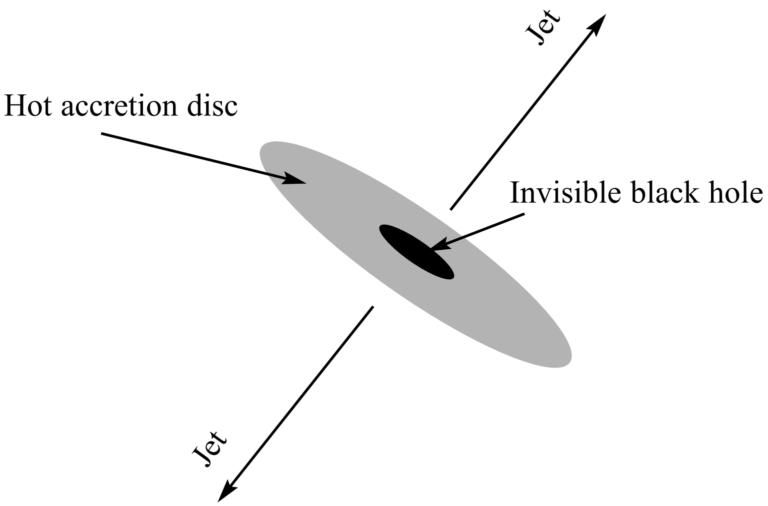

Figure 11.1
A quasar's spinning black hole emitting powerful jets

Whereas large black holes grow in size, smaller ones do not, they slowly expire through emission of 'Hawking radiation' (after Stephen Hawking who first suggested this).

11.1.2 Points of singularity

In wisp theory the smallest point is that of the wisp, and so no points of singularity exist.

At the centre of a black hole lies zero-state space – 'emptiness' – and its mass lies in the wisp space surrounding its zero-state sphere's surface, not at its centre.

11.1.3 Supermassive black holes

Astronomers have collected evidence that suggest all galaxies have supermassive black holes at their centres. Their masses are about 0.5 per cent (typically several million to a billion solar masses) of that of their host galaxies.

How they came to exist is a mystery, but wisp theory suggests that they are fragments of zero-state space blasted out during the big bang.

11.1.4 Ultra-supermassive black hole

An ultra-supermassive black hole contains all the energy and zero-state space needed to create a new universe. Its central zero-state sphere possibly spans several light years across.

Once its size reaches criticality its structure rapidly collapses, tearing its central zero-state space apart and blasting fragments out into wisp space.

A spinning ultra-supermassive black hole produces asymmetry in wisp space when it collapses, which is responsible for the creation of more matter than antimatter.

11.2 COBE (launched 1989)

In 1992 NASA's Cosmic Background Explorer Satellite (COBE) discovered small variations of 1 part in 100,000 in the temperature of the cosmic microwave background radiation.

These tiny variations are believed to be the cause of galaxy formation, although the process by which this happens is not known.

Wisp theory suggests that at the very beginning of the big bang, the explosion threw out spinning fragments of the ultra-supermassive black hole. So disturbances in wisp space were already present before the background radiation formed.

The radiation came from the universe when it was 300,000 years old and its temperature is estimated to have been around 30,00 K. Now, 14 billion years later, it has cooled down to just 3 K above absolute zero, barely detectable but nevertheless clear evidence of an explosive start to the universe.

11.3 Wisp big bang theory

The big bang event started from the collapse of a spinning ultra-supermassive black hole. Once it had reached the point of criticality, its structure collapsed, unleashing enormous gravitational potential energy stored in wisp space.

Matter-fractals formed immediately around its collapsing zero-state sphere, causing wisp space to expand, which in turn pushed the broken surface of the sphere inwards at a speed thousands of times that of light. Opposite surfaces of the sphere would have smashed together, creating powerful longitudinal shock waves that travelled at faster than light speed through wisp space, triggering the formation of matter-fractals along the way.

The continued creation of large numbers of matter-fractals would cause wisp space to expand rapidly.

The collapsed massive zero-state sphere would have blasted spinning fragments of zero-state space out into wisp space.

11.3.1 Inflation

In 1979 Alan Guth proposed the idea of inflation to explain unsolved riddles in the big bang theory.

Immediately following the big bang, the universe underwent a short period of extremely rapid expansion at a speed thousands of times that of light.

Wisp theory suggests that this resulted from the rapid formation of matter-fractals – their shapes expand the surrounding wisp space and generate positive pressure. The huge number of matter-fractals created during the big bang event would have created enormous positive pressure, causing inflation.

Billions of years on, the positive pressure has weakened to almost zero, as wisp space continues expanding.

11.3.2 Redshift

In the 1920s Edwin Hubble detected redshifts (shift towards longer wavelengths) in the spectral lines originating in distant galaxies. He concluded that they were the Doppler shifts due to the distant galaxies receding at great speed.

Hubble found a relationship between the speed of recession of galaxies and their distance from us (Hubble constant), and this provided the first proof that the universe was expanding.

Wisp theory supports the view that the expansion of wisp space causes matter-fractals (including supermassive black holes) to move with it.

11.3.3 Galaxy formation

The collapse of the ultra-supermassive black hole caused its central zero-state sphere to disintegrate rapidly, blasting spinning fragments out into wisp space. These fragments are the supermassive black holes that formed the seeds of the galaxies.

Larger fragments would form large galaxies, which in turn would have attracted smaller fragments, forming the globular clusters that exist in their halos.

Large spinning fragments would form large spiral galaxies; non-spinning fragments would form elliptical or irregular galaxies; and smaller isolated fragments would form dwarf galaxies.

11.3.4 Star speeds in rotating galaxies

Supermassive black holes with masses typically several million solar masses lie at the centres of galaxies.

In theory there should not be a link between the speeds at which outer stars move in a galaxy and the mass of its black hole, but astronomers have found that the two are linked. There is a strong possibility that the presence of the black hole affects the surrounding wisp space, which has the effect of increasing the gravitational pull on stars in the galaxy.

It is likely that the spin of the black hole causes the surrounding wisp space to rotate, which in turn causes it to stretch and reduce its density. In this rotating wisp space matter-fractals' shapes would distort, becoming pear-shaped instead of spherical. Their shapes would attempt to restore to circular symmetry, and in doing so would produce a net additional force directed towards the black hole. The effect is similar to that which causes the Pioneer spacecraft to experience an additional retarding force – see chapter 5, section 5.6 (Pioneers'orbital discrepancies).

The expansion of wisp space in a rotating galaxy causes an effect that is similar to a galactic mass increase. This explains the mystery of the illusive ‘dark matter’, which is believed to cause the stars to orbit faster.

11.3.5 The big crunch

It is highly probable that the universe will eventually collapse in on itself in a big crunch event.

Even though there is evidence that the universe is still expanding, due to positive pressure in wisp space, it is most likely that remnants of the ultra-supermassive black hole still remain and these will in time grow sufficiently powerful to begin to exert a rotational influence on the universe. This will cause an increase in the gravitational pull on matter that has travelled to the extremities of the universe.

This cycle could possibly take 1000 billion years or more! But may be shortened if the universe captures material from other universes.