

02 - It's a Big Place, Space - September 2012

Have you ever stood under a clear dark sky and felt the weight of the universe pressing down on you? But it's not until someone starts spouting numbers that you begin to realise just how big it is.

Assume that our Sun is the size of a pearl, 1 cm in diameter, in the centre of the cricket pitch at Apex Park. Earth would be the size of a grain of sand, orbiting 1 metre from the Sun. What about Saturn? It would be one twelfth the size of the pearl, orbiting around the stumps at each end of the cricket pitch. And Pluto? It would be at about the start of the fast bowler's run up, half-way to the boundary rope.

That's OK so far. We can imagine that just. But how far is it to the next closest star, the binary Alpha Centauri, a pair of similar pearls about 11 metres apart? It will be 295km away, the distance from Sydney to Bateman's Bay on the South Coast. And in-between, apart from a cloud of comets, it's mostly empty space.

But if you want BIG, how far is our pearl-sized Sun from the next nearest major galaxy, the Andromeda Galaxy? On this scale, it is about 162 million km, slightly more than the distance from the real Earth to our real Sun. And on the same scale, the Andromeda Galaxy, like our own Milky Way, would be 10 million km in diameter.

Now that was if our Sun was the size of a 1 cm pearl. But the Sun is actually 1.4 million km in diameter, so all the distances in our little pearl model have to be multiplied by 140 billion.

Try and imagine that. No, neither can I. So when people say the universe is unimaginably big, they are not exaggerating.