

Transcript for **Zero-G Flight**

Every moment of our lives we experience a force that we can't see or touch, yet this force is able to keep us firmly rooted to the ground. It is, of course, gravity. But despite its intangible nature, we always know it's with us.

Now if I was to ask you 'how do you know that there's gravity around here?' then you might say 'well, it's obvious. You know, I can just do an experiment. I can drop something'. Well, yes, but actually, gravity is a little bit more subtle than that, but to really experience it, to understand it, you have to do something pretty extreme.

And this plane has been modified to help me do it. Thanks to its flight plan, it's known as the 'Vomit Comet.'

Once we've climbed to fifteen thousand metres, this plane does something no ordinary flight would do. Its engines are throttled back and the jet falls to Earth. And then, something quite amazing happens.

I'm now plummeting towards the ground, just like someone's cut the cable in a lift. And you see that I'm not moving relative to Einstein. We're all just floating!

By simply falling at the same rate as the plane, for a few fleeting moments we're all free of gravity's grip. But this isn't just a joyride.

Now look, there's something very profound here because, although I'm falling towards the ground, as you see gravity has completely gone away. Gravity's not here anymore. I've cancelled gravity out just by falling – and if you understand that, then you will understand gravity!

So it is possible, by the simple act of falling, to get a very different experience of gravity.