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Life, the Universe, and the Theory of Everything

An interview with researchers at the **Stewart Blusson Quantum Matter Institute** at the University of British Columbia:

Marcel Franz, Professor, UBC Physics & Astronomy

Deputy Director, Stewart Blusson Quantum Matter Institute

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Marcel Franz

To me, being a theoretical physicist, that's how you learn how nature works. Theory is important for our understanding of what's behind all the experiments that are being done. There is a vibrant interplay between theory and experiment, and one cannot really usefully live without the other, I would say.

What is the Theory of Everything?

The idea of the Theory of Everything is really beautiful. From a long time ago, physicists had this idea that one set of laws has to apply to everything in the universe, from the smallest scale - atoms, nuclei - all the way to the largest scales - galaxies, stars, black holes.

At the moment, we don't really have that type of a theory. At the very small scale, quantum mechanics applies beautifully and has been tested to wonderful accuracy. At the largest scales, general theory of relativity also applies. But when these two meet, there are contradictions, and no one knows how to resolve them at the moment. So that's perhaps the most exciting part of physics today.

