

The Ultimate Secrets of the Universe

Fundamentals Series

2: The Universe is a Computational System.

The fact that the universe consists of information and is computational reveals its basic functional structure. There will be a computational space or medium in which its information is stored and computed, an elemental program that continually computes the evolution of this information, and a processor that runs the program.

The elemental program can be *relatively* simple because all it has to do is compute particle interactions or more accurately coherent particle systems. The multi-particle scale universe is *emergent* from particle interactions in aggregate and need not be directly computed by the elemental program.

And, since all particle interactions in the universe must be computed simultaneously by separate *instances* of the elemental program, the universe itself must act as the processor that drives the simultaneous computation of all separate particle processes.

This processor function is the living energy of the universe, its beating heart. It's the source of all time, change, process, evolution and the ultimate source of life and consciousness as well. And its operation directly produces the 'arrow of time'. The processor must execute cycles far faster than the fastest particle processes since it will take multiple cycles to compute them.

Now, the elemental program must exist as real actual information code somewhere but we can't observe it, so it must exist in the form of virtual information. Science has discovered the realm of virtual information. It's called the quantum vacuum.

The quantum vacuum is the fundamental fabric and computational space of the universe within which the information of the observable universe has actualized and is embedded. The quantum vacuum generated the observable universe which actualized from it in the big bang and it continually supports, computes and maintains it.

The quantum vacuum is the universal 'sea' of existence. It's the universal medium of existence within which all the information forms of the universe exist. It, and its information contents, are all that exists. There is no beyond, before, after or outside. All that exists are information forms *of* existence *in* the universal medium of existence – the quantum vacuum.

The virtual information of the elemental program must exist in the quantum vacuum. And it must also contain what we can call the *complete fine-tuning*, all the virtual information necessary to compute the continuing evolution of the observable universe. This includes the fundamental constants, particle properties, logico-mathematical operators, and so forth.

So, the universe consists of the quantum vacuum which contains both the actualized information of the observable universe which is observable because its information interacts, and the virtual information necessary to compute the observable universe which is observable only by its effects in the observable universe.

Everything that exists in the universal medium of existence is a distinguishable form and thus is information. There is a relatively small set of elemental forms such as mass, spin and charge that in combination form the elementary particles, and these particles in aggregate create all information forms in the observable universe. It is these elemental information forms and their interactions that the elemental program computes to create the observable universe.

This is the fundamental design of the computational universe, and how the virtual information of the laws of nature and complete fine-tuning continually compute the evolution of the information structure of the observable universe. This computational model also solves the perennial problem of how non-physical laws of nature could possibly control a supposedly physical universe.

YouTube Fundamentals series:

1. Everything is Information
2. The Computational Universe
3. Computing a Relativistic Universe
4. Computing General Relativity
5. Computing the Quantum Universe
6. Unifying Quantum theory & Relativity
7. Time Travel & Space Travel

See also:

The Complete Theory of
Everything at EdgarLOwen.info