

# The Digital Universe – A 1-Pager

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## Abstract

It will be shown how linearization of the Quantum Einstein Field Equations and their subsequent additive solutions automatically leads to a digital outcome for just everything.

## Digitalization of the Quantum Einstein Field Equations

In a whole set of earlier papers we have used a special form of vectorial root extraction, thereby creating new Dirac-like first order differential equations (e.g. [1 - 21]). Recently, we have demonstrated that these roots are similar to the usual Dirac roots, based on matrices, but with now asymmetric matrices [22] instead of the symmetric Dirac ones [23].

The new asymmetric roots delivered functional solution vectors (“spinors”) to the Quantum Gravity Field Equations<sup>1</sup>:

$$0 = \left( \begin{array}{c} \boxed{R_{\alpha\beta} - R \frac{g_{\alpha\beta}}{2} + \Lambda \cdot g_{\alpha\beta}} \\ -\frac{1}{2F} \left( \begin{array}{c} F_{,\alpha\beta} (n-2) + F_{,ab} g_{\alpha\beta} g^{ab} + F_{,a} g^{ab} (g_{\beta b, \alpha} - g_{\beta\alpha, b}) - \\ F_{,\alpha} g^{ab} g_{\beta b, a} - F_{,\beta} g^{ab} g_{\alpha b, a} + F_{,d} g^{cd} \left( \begin{array}{c} g_{\alpha c, \beta} - \frac{1}{2} n g_{\alpha c, \beta} - \frac{1}{2} n g_{\beta c, \alpha} \\ + \frac{1}{2} n g_{\alpha\beta, c} + \frac{1}{2} g_{\alpha\beta} g_{ab, c} g^{ab} \end{array} \right) \end{array} \right) \\ + \frac{1}{4F^2} (F_{,\alpha} \cdot F_{,\beta} (3n-6) + g_{\alpha\beta} F_{,c} F_{,d} g^{cd} (4-n)) \\ + (n-1) \left( \frac{1}{2F} \left( \begin{array}{c} 2\Delta F - 2F_{,d} g^{cd}{}_{,c} \\ - \frac{n}{(n-1)} F_{,d} g^{cd} g^{ab} g_{ac, b} \end{array} \right) + \frac{g^{ab} F_{,a} \cdot F_{,b}}{4F^2} (n-6) \right) \cdot \frac{g_{\alpha\beta}}{2} \end{array} \right) \delta G^{\alpha\beta} \quad (1)$$

and worked almost as the original Dirac roots on the Klein-Gordon equation, only that the latter give  $n$  solutions ( $n-1$  if  $n$  is an odd number), with  $n$  denoting the number of dimensions of a system, while the new roots end up with  $2^n$  solutions or states.

In addition, we have seen (e.g. [24 – 38]) that at least in black holes, mass is stored as dimensions with each dimensions coding one bit. This also gives  $2^n$  possible states.

## Conclusions

We conclude that systems, choosing the asymmetric linearization option to the field equations (1), are behaving like computers (though not necessarily of v. Neumann type). Such a system could also be a whole universe.

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<sup>1</sup> Regarding their derivation we refer to [24 - 28].

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