

Refutation of quantum block chain encoding

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We assume Meth8/VL4 where the designated *proof* value is \top tautology. The truth table is repeating fragments of 16-values, row major and horizontal.

LET p q r s: x y 0 1;
 ~ Not; + Or; & And; # necessity, for all; % possibility, for one or some;
 (p@p) 00; (%p>#p) 01; (%p<#p) 10; (p=p) 11; (~(%p>#p)+(%p>#p)) (-1)^x.

Definition	Axiom	Symbol	Name	Meaning	2-tuple	Binary ordinal
1	p=p	T	tautology	proof	11	3
2	p@p	F	contradiction	absurdum	00	0
3	%p>#p	N	non-contingency	truthity	01	1
4	%p<#p	C	contingency	falsity	10	2

From: Rajan, D.; Visser, M. (2018). Quantum blockchain using entanglement in time.
arxiv.org/pdf/1804.05979.pdf

a code converts classical information into spatially entangled Bell states; two classical bits, xy , where $xy = 00; 01; 10$ or 11 , are encoded to the state $|\beta_{xy}\rangle = (1/(2^{0.5}))*(|0\rangle|y\rangle + ((-1)^x)*(|1\rangle|\sim y\rangle))$, where $\sim y$ is the negation of y . (2.1)

We remove the bra-ket notation and the scalar constant as irrelevant to the binary argument.

$$((p\&q)=(((p@p)+(%p>#p))+((%p<#p)+(p=p)))) > ((r\&p)+(((%p>#p)+\sim(%p>#p))\&(s\&q))) ; \quad \mathbf{TTTT} \quad \mathbf{TTTT} \quad \mathbf{TTTT} \quad \mathbf{TTTT} \quad (2.2)$$

Eq. 2.2 as rendered is *not* tautologous. This means the attempt to convert classical information to quantum states is ultimately mistaken as a basis for quantum blockchain.