

Shortest refutation of Bell's inequality

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We assume the method and apparatus of Meth8/VL4 with \top as the designated *proof* value, F as contradiction, N as truthity (non-contingency), and C as falsity (contingency). The 16-valued truth table is row-major and horizontal.

LET: p, q, r, s : A, B, C, N; \sim Not; $\&$ And; $+$ Or; $-$ Not Or;
 $>$ Imply, greater than; $<$ Not Imply, less than; $=$ Equivalent; $(p=p)$ proof.

From: emmynoether.com/EAppendixBell.pdf (Leon M. Ledderman), attributed to faraday.physics.utoronto.ca/PVB/Harrison/BellsTheorem/BellsTheorem.html

"This is a special case of a more general statement for ensembles of objects each having three binary attributes, A, B, and C: $N(A, \text{not } B) + N(B, \text{not } C) \geq N(A, \text{not } C)$. (1.1)
We give the proof of this theorem below. We'll adapt this, following John Bell, in a "physically reasonable way" to our quantum mechanical experiment (a lot of "philosophy" is hidden in the phrase "physically reasonable way")."

Eq. 1.1 means a statement of Bell's inequality.

$$\sim((s\&(p\&\sim q))+(s\&(q\&\sim r))<(s\&(p\&\sim r))=(p=p); \quad \text{TTTT TTTT TTFT TFTT} \quad (1.2)$$

Eq. 1.2 is *not* tautologous. This means Eq. 1.1 is not a theorem.