**Simplest refutation of Bell's inequality** 

From: Maccone, L. (2013). "A simple proof of Bell’s inequality". arxiv.org/pdf/1212.5214.pdf

We use the apparatus and method of the modal logic model checker Meth8/VŁ4, a resuscitation and correction of the modal logic system of Łukasiewicz $B_4$.

The designated *proof* value is T tautology; other values are: N truthity (non contingency); C falsity (contingency); and F contradiction.

With four propositional variables, the 16-valued truth table result is row-major and horizontal.

LET ~ Not; & And; + Or, add; > Imply, greater than; < Not Imply, less than;
= Equivalency; % possibility, for one or some; # necessity, for all;
p probability; (%p>#p) ordinal one, N truthity; (p=p) T tautology, theorem;
~(x>y) not (x greater than y), as in x equal to or less than y.

The summation of the respective probabilities for q equivalent to r, r equivalent to s, and q equivalent to s is equal to or greater than one, and hence is equivalent to a theorem. (1.1)

~((((p&q)=(p&r)) + (((p&r)=(p&s)) + ((p&q)=(p&s)))) < (%p>#p)) = (p=p) ;
NNNN NNNN NNNN NNNN (1.2)

For further qualification to strengthen Eq. 1.1, we rewrite it as:

If the respective probabilities for q, r, s are equivalent to and equal to one, then the summation of the respective probabilities for q equivalent to r, r equivalent to s, and q equivalent to s is equal to or greater than one. (2.1)

(((p&q)=((p&r)=(p&s)))=(%p>#p)) >
~((((p&q)=(p&r)) + (((p&r)=(p&s)) + ((p&q)=(p&s)))) < (%p>#p)) ;
NNNT TTNN TTNN NNTT (2.2)

Eqs. 1.2 and 2.2 as rendered are *not* tautologous. Hence, Bell's inequality as Eqs. 1.1 or 2.1 is refuted.