

Review of: "A Presupposition of Bell's Theorem"

Refik Mansuroglu¹

¹ Friedrich-Alexander Universität Erlangen-Nürnberg

Potential competing interests: No potential competing interests to declare.

The paper reviews the violation of Bell's theorem by standard quantum theory and draws attention to a technicality that weakens the statement of Bell's theorem such that it is consistent with Tsirelson bound, namely the interpretation of spin measurement outcomes as vectors instead of scalars.

This is an important insight, but I think the paper could have a stronger claim, if connections between measurements in quantum theory and vector interpretations were made.

How would a quantum theory that measures vectors instead of scalars look like? In other words: Where does the reduction of the vector information to scalar expectation values in standard projective quantum measurements appear and can it be repaired?

Is this a spin specific phenomenon or could I do this for arbitrary operators (possibly acting on infinite dimensional spaces)? The paper gives the impression that there should/could be a more general quantum theory that is consistent with Bell's theorem, but leaves it quite vague. It should be clearly stated instead.