

A. Khrennikov: Contextuality vs. Incompatibility

Referee report

The paper aims at comparison of the notions of contextuality and incompatibility in quantum theory.

It is difficult to say what are the results obtained in this paper, or even what are the problems studied. In the introduction, the question of physical meaning of "contextuality peeled off incompatibility" is asked, but it is not clear what the author has in mind. Further on, a contextual CHSH-like inequality is presented and a necessary and sufficient condition for violation is given, this condition was already obtained and discussed in (at least) two other papers by the author (refs. [9] and [10]). It is clear (and shown before) that this condition requires that the observables in question are incompatible, and in the more restricted nonlocality scenario the condition is in fact equivalent to incompatibility. The author claims (without giving any example or explanation) that in general the constraint is nontrivial and asks about the interpretation and physical meaning. The answer is: "I have no idea." This is all.

I would understand that the author observed an important problem that is difficult to solve and wants to inspire a "foundational research in this direction", but very little is done for it here. I would expect a more thorough introduction with clear exposition of the context and motivations, as well as a precise statement of the problem. Nothing like this is present here.

In conclusion: As it is, the paper is not publishable and would require a substantial revision.