Experiment on Bell's inequalities violation would give same result with un-entangled classical photons

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Experiments testing Bell's inequalities generally uses sources of entangled photons emitted in opposite direction, sent through polarizer of specific different orientation and finally correlated. But the correlation result would be the same if photons was emitted by only one source of 360° rotating polarization, separated in two flux by a semi-transparent mirror, and finally correlated as in the standard experiment. Therefore, it would demonstrate that the result is not due to any entangled state of the photons.

1) **Classical scheme of the Bell's inequalities violation experiment:**

The classical scheme of the Bell's inequalities violation experiment as made by Alain Aspect first in 1980-82 [1] is:

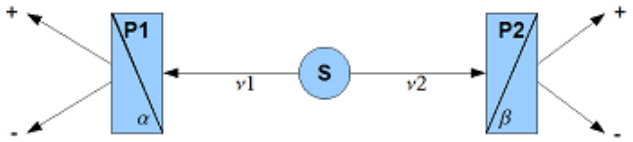

Fig 1.

The source is an exited atom that emit supposedly two entangled photon at the same time that has the same polarity vertical, horizontal or linear polarity with an equal probability, and correlation result after P1 & P2 show clearly Bell's inequalities violation.

2) **Proposed experiment:**

The idea proposed in this article is that the correlation result would be the same with a classic source of photons, so with not at all entangled photons.

On figure 2 the classic source S is made of numbers of photons of equally melted all polarity. They are sent through a slow 360° rotating polarizer R, then separated in two beam by semi-transparent mirror and directed to the P1 & P2 polarizer of relatives angles such as $|\alpha-\beta| = 22.5°$.

After P1 & P2 we correlate all around the 360° rotating polarizer at several specific time interval, let's say each milliseconds, randomly one photon from P1 with one photon from P2 that has sufficiently short time difference compare to the rotation speed of R to have both photons with sufficiently same polarization out of semi-mirror M.

The prediction is that the experiment will show same violation of the Bell's inequalities and would demonstrate that the result is not due to any entangled state of the photons but to some artefact in the detector or anything else that has nothing to do with quantum mechanics or non-locality theories.

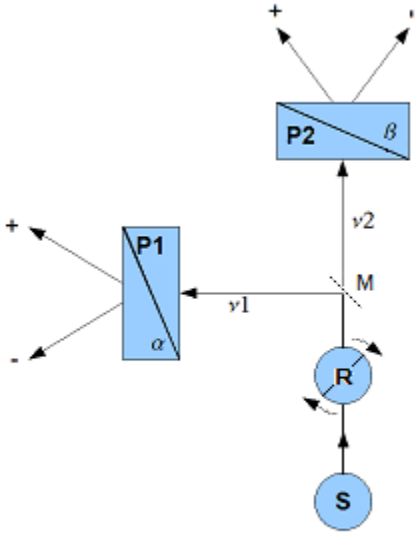

Fig 2.

We could also use the described source here with faster rotating polarizer in the "Violation of Bells inequality using continuous variable measurements" experiment [2].

3) **Conclusion:**

Strange "quantic" result in those experiments are not due to some "entangled state" of the photons but to our misunderstanding on a lot of the behavior and interactions of particles, electromagnetic and magnetic field.

[1] Aspect, Alain (1980-82) experiment to demonstrate the violation of Bell's inequalities : https://en.wikipedia.org/wiki/Aspect%27s_experiment

[2] Violation of Bells inequality using continuous variable measurements : https://arxiv.org/pdf/1801.03194.pdf