

Re: Why does EPR need two observables?

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a student ha scritto:

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(b) "Giving up locality is equivalent to giving up parts of the scientific method": The main reason that physicists get away with explaining so many things about the world around us is because we can ignore so much of the world around us (we are also very good at picking things that we can explain!). In particular, most interactions between systems (and indeed most systems) can be ignored in modelling a particular phenomenon – particularly if they are a long long way away (eg, in the lab next door). If we suddenly say that there are in fact nonlocal interactions going on between everything, we put this basic principle at risk – how can I ever hope to understand the energy levels of a single hydrogen atom if the electron is interacting with my Aunt Jemima's hairdryer? Where is the noise?

The argument is not new. Actually Newton had to deal with it. When the "Principia" came out, mainstream localists–mechanicists yelled (not without reason) that Newton's action–at–distance smelled of alchemy. He famously replied "Hypotheses non fingo".

The core issue is still whether the "scientific method" is about predicting experimental outcomes or fitting explanatory expectations.

Cheers,

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