

The demythisation of advanced fields

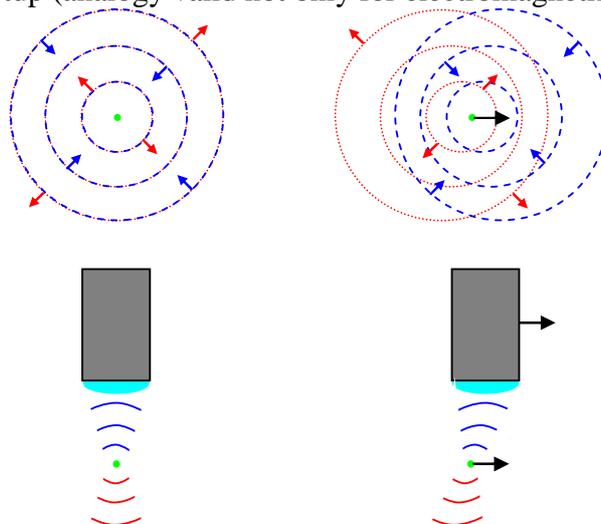
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The advanced potential does not violate causality (as is commonly claimed – “is unphysical”). It corresponds to (“physical”) converging waves/potentials ($r-ct$ vs. $r+ct$), antimatter ($-t$ vs. t , i.e. “the arrow of time”) or (also mythical) collapsing wavefunction (that always corresponds to the field – see e.g. [1] – which also corresponds to a particle trajectory through (“4D” space-time) transformation – such as the wave equation with the speed of interaction). The Everett’s Universal wavefunction (interpreted as a potentiality or transformed to the Bohm’s quantum potential – its relativistic or metric version) corresponds to the total (“classical”) potential of interactions (defined from the past to the future) and also to trajectories (currents) of all particles/“sources” (for all times).

In the static case, effects of advanced (converging and absorbed) and retarded (diverging and radiated) fields are the same (i.e. it can not be distinguished in “non-relativistic” limit – as well as matter/antimatter or the time flow). And more, the division of field into the same halves (advanced and retarded) is necessary (not only from symmetric reasons) to keep conservation laws (as well as in the modified Whitehead’s theory of gravitation [2]) and determinism (in a contrast with the free will that creates (e.g. random) causes from nothing (also for particles! – e.g. an action in matter/detector) and do not from a preceding/advanced reality). The psychological influence (and the wrong understanding to the mathematical construct named potential/field or wavefunction) thus creates this myth, because scientific experiments are based on the subjective will (i.e. a complex non-linearity).

The following example illustrates (in static and stationary cases), how can be advanced field (that determines the future position of particle as “antifield”/“antipotential” and it is not only a formalism such as the Batalin-Vilkovisky) analogical to the converging wavefront/field (blue) in a particle trapping setup (analogy valid not only for electromagnetism, but also for gravity).



[1] V.M. Simulik and I.Yu. Krivsky: Slightly generalized Maxwell classical electrodynamics can be applied to inneratomic phenomena, Annales de la Fondation Louis de Broglie, Volume 27 no 2, 2002, p. 303, <http://aflb.ensmp.fr/AFLB-272/aflb272p303.pdf>

[2] P. Křen: On the Multiple Interpretations of Gravity, 2012, <http://gsjournal.net/Science-Journals/Research%20Papers-Relativity%20Theory/Download/4217>