

Re: When do we need renormalization

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From: Arnold Neumaier (*Arnold.Neumaier_at_univie.ac.at*)

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Eugene Stefanovich wrote:

> *Arnold Neumaier wrote:*

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>> *Eugene Stefanovich wrote:*

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>>> *I think these views are prevailing at the moment. My work on RQD, however, shows that all renormalization problems can be solved without such an assumption, and a consistent theory of charged particles and photons can be constructed on its own without any reference to something "more fundamental".*

>>

>> *You are claiming far too much.*

>>

>> *You haven't shown your theory to be consistent. You only constructed a sequence of approximate Hamiltonians with neither Lorentz invariance nor gauge invariance. Consistency would require that you can show that a limiting Hamiltonian exists which gives rise to a theory having both these properties.*

>>

>> *Arnold Neumaier*

>

> *I have said repeatedly that I agree with you.*

If you'd really agree with me you'd moderate your claims.

You claim to have a 'consistent theory of charged particles and photons' which you do not have, unless you use the term 'consistent' in a very loose and misleading way.

> *I do not have*

> *a proof that the series for the Hamiltonian converge. Just as*

> *traditional QED does not have a proof that the series for the*

> *S-matrix converges.*

Without having a Hamiltonian, you do not have a Hamiltonian theory of QED, and not even an S-matrix. What you have is a sequence of Hamiltonians H_k and a corresponding sequence of dynamical theories,

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of which you can prove that the corresponding S-matrices S_k agree to order $O(\alpha^k)$ or $O(\hbar^k)$ with the S-matrices of QED.

But doing dynamics with some H_k probably drives you away from the true dynamics of QED in a very short time...

Arnold Neumaier