

Re: Repeatability, scientific method, and probabilistic results

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- *From:* glhansen@xxxxxxxxxxxxxxxxxxxxxxxx (Gregory L. Hansen)
 - *Date:* Sat, 14 May 2005 01:07:54 +0000 (UTC)
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In article <1116019258.415336.67690@xx>, Tim Golden <ttpppggg@xxxxxxxx> wrote:

>Is there a conflict with probabilistic models and the scientific
>method?
>
>Whereas a simple experiment allows for errors in the equipment and
>allows for probabilistic correction, quantum physics imposes these
>methods on the non-instrumental portion of the experiment.
>
>Repeatability is a tenet of the scientific method.
>Some will argue that the quantum experiments are repeatable.
>The type of repeatability is starkly different from earlier work.
>The electron did not suffer in Millikan's work from this quantum
>repeatability issue even though it is quantized. Likewise the spectrum
>of atomic radiation does not suffer. Only the new quantum physics with
>wavefunctions needs a new type of repeatability.
>
>Where do you stand?
>
>-Tim
>

If the theory says that you will get certain types of results according to a distribution of probabilities, and you repeat the same experiment and get the same experiment many times, the theory will have been disproven. Validation requires showing the same probability distribution experimentally that is predicted theoretically.

You can, of course, find more deterministic tests of quantum mechanics in the thermodynamic limit. E.g. superfluids, Bose-Einstein condensates, lasers, line spectra.

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"Outside the camp you shall have a place set aside to be used as a latrine. You shall keep a trowel in your equipment and with it, when you go outside to ease nature, you shall first dig a hole and afterward cover

up your excrement." — Deuteronomy 23:13–14

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- *Follow-Ups:*

- ◆ *Re: Repeatability, scientific method, and probabilistic results*

- ◇ *From:* markwh04

- *References:*

- ◆ *Repeatability, scientific method, and probabilistic results*

- ◇ *From:* Tim Golden

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