Re: Neumaier's Modification of Heisenberg 4: The "Generalized HUP"

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>>From Osher Doctorow

Wait a moment! Isn't a random variable with a finite number of values probabilistic?

Yes, but it's like throwing away knowledge/information when you replace Individual values with means or "expectations". If all that remains of probability−statistics in the quantum theory is finite discrete random variables, then in addition to the incredible loss of knowledge from aggregating or averaging Individual values, there is an incredible loss of knowledge from throwing away all continuous random variables.

But aren't continuous random variables outlawed by discrete energy eigenvalues for example? Heck no!

But it gets funnier to a mathematical probability−statistics person. Many physicists and engineers don't know that there is a considerable parallelism between continuous and discrete probability distributions! Surely I'm joking, Mr. Feynman or no Mr. Feynman as the saying goes? No. Of course, it helps to take a third year college probability course at a research university or equivalent that requires calculus.

Look at these parallels:

1) uniform distribution and equiprobable (discrete) distribution

2. exponential distribution and geometric (discrete) distribution

3. gamma distribution and Poisson (discrete) distribution except that x goes over to parameter a + 1 or alpha + 1

This is two out of three of the maximum entropy Shannon distributions for continuous random variables! And the normal/Gaussian approximation holds for most known discrete distributions, the normal/Gaussian being the third Shannon maximum entropy distribution!

What this means in simple language is that not only Neumaier but nobody can drop continuous probability from quantum theory without dropping

the whole quantum theory.

Next question :>)

Osher Doctorow

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    - ◊ *From:* OsherD

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