Independent/Dependent Phases

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>>From Osher Doctorow mdoctorow@xxxxxxxxxxx

>>From the last posting of my Acceleration of the Universe thread a few minutes ago, there is a good reason to consider that, just as the complex numbers/variables and quaternions and octonions can be regarded as different "phases" from our physically visible and audible and tactile world, so the "independent" versus "dependent" variables, whether deterministic or probabilistic/statistical, form a different phase or perhaps two different phases with a "complex−like but not complex" operator Dyt that operates in the Riccati Differential equation scenario.

The operator Dyt or Dy(Dt) or Dy(d/dt) operates on an expression which involves y and t and was derived from the assumption that y = y(t) is dependent on t, but it uses the fact that the expression in y and t formally makes sense even if y and t are independent and takes teh partial derivative of this expression with respect to y. The result cuts through a lengthy process and immediately yields a critical point y = 1/2 for change from acceleration to deceleration of the physical Universe and turns out to asymptotically approximate the second time derivative Dtt(y) in this scenario!

We already know in mathematical probability−statistics that the mixed second partial derivative is exceptionally important because:

1) Dxy(F(x, y)) = f(x, y)

for continuous Random Variables X and Y where F(x,y) is the joint bivariate cumulative distribution function (cdf) of X and Y at (x, y) and f(x, y) is their joint bivariate probability density function (pdf).

We also know that in Fuzzy Multivalued Logics (FMLs), there are three "phases" or "domains", namely that of Lukaciewicz/Rational Pavelka FML implication, that of Product/Goguen FML implication, and that of Godel FML implication, which respectively have Probability−Statistics analogs Probable Influence (PI), Conditional Probability, and Independent Probability−Statistics. We know that PI is especially applicable to Rare Events, that Conditional Probability is applicable to Fairly Frequent Events but not Rare Events because it blows up near probability 0 (P(A) = 0) events, and that both Rare and Fairly Frequent Events can be Independent in the Probability−Statistics sense(s) which latter I will here use to mean statistically independent. It is arguable that Independent Probability−Statistics is usable for Very Frequent Events, where Rare Events have probability < .05, Fairly Frequent Events have probability between .05 and .95, and Very Frequent Events have probability > .95. .01 and .99 are common replacements for .05 and .95 respectively, and some statisticians even work with ..001 and .999 respectively or use some intermediate value.

We therefore know some things about "independence" versus "dependence", but there are still many unknown things. In particular, "deterministic" independence is commonly used in taking partial derivatives, but its relationship to nondeterministic or statistical independence is not usually specified or even defined.

Osher Doctorow

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    - *From:* OsherD

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