

1035-81-481

Jun Tanaka* (juntanaka@math.ucr.edu), 1571 Julia Way, Riverside, CA 92501. *The Generalized Feynman-Kac formula a Lebesgue-Stieltjes measure.*

In this expository talk, I will mainly discuss my adviser Dr. Michel Lapidus' result titled "the Generalized Feynman-Kac formula a Lebesgue-Stieltjes measure", mostly discussed in Chapter 17.2 in the book "The Feynman Integral and Feynman's Operational Calculus," (Oxford Univ. press, 2000) by Gerald W. Johnson and Michel L. Lapidus.

This Feynman-Kac formula was obtained for an arbitrary Borel measure. For this talk, I will concentrate on the more physically relevant case of a measure with a finitely supported discrete measure and for simplicity, on the case of a continuous measure + a Dirac mass at a single time τ .

I will show that the function defined by the function $u(t)$ associated with the corresponding generalized Feynman-Kac functional satisfies a suitable differential equation and integral equation. I will then deduce that $u(t)$ has a discontinuity at τ . It will follow that in the quantum mechanical case, $u(t)$ satisfies a suitable form of the Schrodinger equation between the time discontinuities (i.e, here, in the open intervals determined by τ). Finally, I will give some possible physical interpretations for these results. (Received September 15, 2007)