1116-VB-2807 **Gonzalo Bley*** (gb3kd@virginia.edu) and **Lawrence Thomas**. *Estimates on Functional Integrals of Quantum Mechanics and Non-Relativistic Quantum Field Theory.*

We provide a unified method for obtaining upper bounds for certain functional integrals appearing in quantum mechanics and non-relativistic quantum field theory, functionals of the form $E\left[\exp(A_T)\right]$, the (effective) action A_T being a function of particle trajectories up to time T. The estimates in turn yield rigorous lower bounds for ground-state energies, via the Feynman-Kac formula. The upper bounds are obtained by writing the action for these functional integrals in terms of stochastic integrals. The method is illustrated in familiar quantum mechanical settings: first, for the hydrogen atom, where the result is sharp in the large T limit, and second, for the harmonic oscillator, even with time-dependent coupling, where we recover Cameron and Martin's computation of the functional integral for quadratic interactions. Finally, we illustrate the method as it applies to the optical multi-polaron model and to regularized massive and massless Nelson models, giving a priori lower bounds on their ground state energies. (Received September 22, 2015)