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**Matthew D Blair\*** ([blair@math.unm.edu](mailto:blair@math.unm.edu)). *The Van Vleck Formula on Ehrenfest time scales and stationary phase asymptotics for frequency-dependent phases.*

The Van Vleck formula is a semiclassical approximation to the integral kernel of the propagator associated to a time-dependent Schrödinger equation. Under suitable hypotheses, we present a rigorous treatment of this approximation which is valid on “Ehrenfest” time scales, which are time scales whose length grows as Planck’s constant tends to 0. Our derivation is based on an approximation to the integral kernel often called the “Herman-Kluk” approximation, which expresses the kernel as an integral superposition of Gaussians parameterized by points in phase space, and has been rigorously justified on Ehrenfest time scales. In order to derive the Van Vleck approximation from the Herman-Kluk approximation, we are led to develop stationary phase asymptotics for oscillatory integrals where the phase functions depend on the frequency parameter in a nontrivial way. (Received August 17, 2021)