1016-41-180 **Diego Dominici*** (`dominicd@newpaltz.edu`), Department of Mathematics, State University of New York at New Paltz, 75 S. Manheim Blvd. Suite 9, New Paltz, NY 12561-2443. *Asymptotic analysis of the generalized Hermite polynomials by the ray method.* Preliminary report.

We analyze the generalized Hermite polynomials $H_n^\nu(x)$, defined by the Rodrigues formula

$$H_n^\nu(x) = (-1)^n \exp\left(x^\nu\right) \frac{d^n}{dx^n} \exp\left(-x^\nu\right),$$

asymptotically as $n \to \infty$. The polynomials $H_n^2(x)$ are the classical Hermite polynomials. We present the main properties of the polynomials $H_n^\nu(x)$. Using the discrete ray method, we obtain asymptotic approximations valid in the exponential, oscillatory and transition regions. We illustrate the accuracy of our formulas with numerical examples. (Received February 11, 2006)