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**Houshang H Sohrab\*** (hsohrab@towson.edu), Department of Mathematics, Towson University, 8000 York Road, Towson, MD 21252-0001. *Subpolynomial and Subexponential Functions*. Preliminary report.

We shall discuss necessary conditions for real-valued functions on the Euclidean  $n$ -space to be subpolynomial (i.e., satisfy  $f(x) = o(|x|^m)$ , as  $|x| \rightarrow \infty$ , for a positive integer  $m$ ) or subexponential (i.e., satisfy  $f(x) = o(e^{\varepsilon|x|})$ , as  $|x| \rightarrow \infty$ , for all  $\varepsilon > 0$ ). In the subexponential case, the condition is one of the various (necessary and sufficient) conditions for hypoellipticity of polynomials in several variables. Using another such condition we indicate how a subexponential function can be "smoothed" and also discuss the spectra of second order self-adjoint differential operators with subexponential coefficients. (Received July 13, 2009)