1010-41-88 **N. K. Govil*** (govilnk@auburn.edu), Department of Mathematics and Statistics, Auburn University, Auburn, AL 36849. *Some Inequalities concerning Polar Derivative of Polynomials and Related Entire Functions.*

Let $p(z) = \sum_{v=0}^{n} a_v z^v$, be a polynomial of degree n, and for any complex number α, let

$$D_\alpha p(z) = np(z) + (\alpha - z)p'(z).$$

Then $D_\alpha p(z)$ is a polynomial of degree $(n-1)$, and is called the Polar Derivative of $p(z)$ with respect to the point α. It generalizes the ordinary derivative in the sense that

$$\lim_{\alpha\to\infty}\left[\frac{D_\alpha p(z)}{\alpha}\right] = p'(z),$$

uniformly with respect to z for $|z| \leq R$, $R > 0$.

Further, if f is an entire function of exponential type then with respect to any complex number ζ, the function $D_\zeta[f]$ is defined as

$$D_\zeta[f] = \tau f(z) + i(1-\zeta)f'(z).$$

The above definition is due to Rahman and Schmeisser [J. Math. Anal. Appl. 122 (1987), 463-468]. Also, note that

$$\lim_{\zeta\to\infty}\left|\frac{D_\zeta[f(z)]}{\zeta}\right| = |f'(z)|.$$

In this talk we wish to present some inequalities involving $D_\alpha p(z)$ and $D_\zeta[f(z)]$. (Received August 21, 2005)