1046-30-1442   **Mark E. Lund*** (`lund@math.niu.edu`), Department of Mathematical Sciences, Northern Illinois
University, DeKalb, IL 60115-2888. *Clunie Type Theorems for Annuli.*

Suppose f is a solution to a complex differential equation $P(z, f)A^*(z, f) = B^*(z, f)$, where P is a polynomial of f with meromorphic coefficients, and A^* and B^* are polynomials of f and its derivatives with meromorphic coefficients. A Clunie type theorem is one in which a bound is given for the proximity function $m(r, A^*)$ and plays in important role in the study of complex differential equations. A Mohon'ko type theorem is one in which a bound is given for $m(r, 1/(f - c))$. We prove versions of Clunie and Mohon'ko type theorems for annuli, extending results of Khrystiyahnyn, Kondratyuk and Laine. To this end, we prove a version of a well-known theorem of Gol'dberg and Ghrinshtein for functions meromorphic in an annulus. We apply these results to calculate bounds for the proximity functions of several classical functions that are meromorphic in annuli. Finally, we present Clunie type theorems for a disk. (Received September 16, 2008)