1116-12-1478 **Carlos E Arreche*** (cearrech@math.ncsu.edu), Mathematics Department, North Carolina State University, Campus Box 8205, Raleigh, NC 27605. *On the computation of the difference-differential Galois group for a second-order linear difference equation.*

Given a linear difference equation, there is a difference-differential Galois group that encodes the differential-algebraic dependencies among the solutions of the equation. After giving a brief introduction to this theory, I will describe algorithms to compute the Galois group associated to a second-order linear difference equation over $C(x)$, the field of rational functions over a computable field C of characteristic zero, with respect to the C-linear shift automorphism that sends x to $x+1$. I will also discuss some concrete examples to illustrate these algorithms, and show explicitly in the examples how to derive the differential-algebraic dependencies among the solutions from the knowledge of the defining equations for the Galois group. (Received September 20, 2015)