1100-34-146   **Carlos E. Arreche*** (`carreche@gc.cuny.edu`), The Graduate Center, Mathematics Department, 365 Fifth Ave., Room 4208, New York, NY 10016. *Computing unipotent radicals of parameterized Picard-Vessiot groups: the case of second-order equations.*

We present a new method to compute the unipotent radical $R_u(G)$ of the parameterized Picard-Vessiot (PPV) group G associated to a second order linear differential equation with differential parameters. Our procedure relies on an earlier algorithm to compute $R_u(G)$, due to Dreyfus, which is effective under the assumption that the reductive quotient $G/R_u(G)$ is differentially constant. When this condition is not satisfied, we compute a new set of parametric derivations such that the PPV group G' (relative to the new parametric derivations) has the properties that: $G'/R_u(G')$ is differentially constant; and $R_u(G')$ is defined by the same differential equations as $R_u(G)$. (Received February 06, 2014)