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Azmy S. Ackleh, Rainey Lyons* (rainey@louisiana.edu) and **Nicolas Saintier**. *Finite Difference Schemes for a Structured Population Equation in the Space of Measures.*

We present two finite-difference methods for approximating solutions to a structured population model in the space of non-negative Radon Measures. The first method is a formally first-order upwind-type scheme and the second is high-resolution method of formally second-order. We prove that the two schemes converge to the solution in the Bounded-Lipschitz (or flat) norm. We will provide several numerical examples demonstrating the order of convergence and behavior of the schemes around singularities. In particular, these numerical examples show for smooth initial conditions, the upwind method is of first order and the high-resolution method is of second order. Furthermore, for singular solutions the second-order high-resolution method is shown to be superior to the first-order method. (Received September 09, 2019)