1163-92-862   **Azmy S. Ackleh*** (`azmy.ackleh@louisiana.edu`), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504-1010, **Rainey Lyons** (`rainey.lyons1@louisiana.edu`), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504-1010, and **Nicolas Saintier** (`nsaintie@dm.uba.ar`), Departamento de Matemática, Universidad de Buenos Aires, (1428) Pabellón I - Ciudad Universitaria, Buenos Aires, Argentina. *A Structured Coagulation-Fragmentation Equation in the Space of Radon Measures.*

We present a structured coagulation-fragmentation model which describes the population dynamics of oceanic phytoplankton. This model is formulated on the space of Radon measures equipped with the bounded Lipschitz norm. We prove that the model is well-posed using a fixed-point approach. We also show that the model reduces to the classical discrete and continuous models for certain choices of parameters. We study the interplay between the physical processes of coagulation and fragmentation and biological processes including growth and reproduction to understand how these processes contribute to the regularity of solutions. We also present a numerical approximation for the coagulation-fragmentation equation in the space of Radon measures and test its performance. (Received September 13, 2020)