

Inversion and Data Assimilation for Advection Reaction Transport equation

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Studying the Advection-Reaction Transport equation is rich in theory and application. The problem has a deep connection to physics, biology, engineering, and data science. It is also a foundation for more complex models. This project aims to develop a framework for the advection reaction transport equation, taking into account the inversion procedure and data assimilation approaches. It is essential to improve our understanding of radiation measurements to ensure that humans do not receive unnecessary radiation exposure. We analyse the solution of the forward problem analytically and numerically. Then, we discuss the use of the inverse problem and finally introduce the 3D-VAR application. This work is supported by numerical examples to visualise the results.