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Determination of fractional transport exponents in a simple fluid drift-wave turbulence model DEBASMITA SAMADDAR, D.E. NEWMAN, Univ. of Alaska Fairbanks, R. SANCHEZ, Oak Ridge National Laboratory, B.A. CARRERAS, BACV Solutions Inc. — In this poster, the recently developed nonlocal (quasi-linear) renormalization scheme to derive renormalized transport equations for passive scalars in terms of fractional differential operators will be used to explore transport in a simple drift wave model. In this contribution, we use this new method to determine the existence of fractional exponents in simulations of drift-wave turbulence in slab geometry and discuss the merits and disadvantages of the method with respect to the average propagator method. Several driven and non-driven situations will be explored, in which the relative dominance of the polarization and ExB nolinearities will be tuned artificially. In this way, we also test the robustness of the fractional transport models to changes in the basic dynamics, which will help to assess the potential for application to more realistic geometries of these methods.

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