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GLOBAL WELL-POSEDNESS AND SYMMETRIES FOR DISSIPATIVE ACTIVE SCALAR EQUATIONS WITH POSITIVE-ORDER COUPLINGS

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Abstract: We consider a family of dissipative active scalar equations outside the L^2-space. This was introduced in [**7**] and its velocity fields are coupled with the active scalar via a class of multiplier operators which morally behave as derivatives of positive order. We prove global well-posedness and time-decay of solutions, without smallness assumptions, for initial data belonging to the critical Lebesgue space $L^{\frac{n}{2\gamma-\beta}}(\mathbb{R}^n)$ which is a class larger than that of the above reference. Symmetry properties of solutions are investigated depending on the symmetry of initial data and coupling operators.

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