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Alexey Cheskidov* (acheskid@uic.edu) and **Xiaoyutao Luo**. *Nonuniqueness of weak solutions for the transport equation at critical space regularity.*

We consider the linear transport equations driven by an incompressible flow in dimensions $d \geq 3$. For divergence-free vector fields $u \in L^1W^{1,q}$, the celebrated DiPerna-Lions theory of the renormalized solutions established the uniqueness of the weak solution in the class $L^\infty L^p$ when $\frac{1}{p} + \frac{1}{q} \leq 1$. For such vector fields, we show that in the regime $\frac{1}{p} + \frac{1}{q} > 1$, weak solutions are not unique in the class L^1L^p . One crucial ingredient in the proof is the use of both temporal intermittency and oscillation in the convex integration scheme. (Received August 04, 2020)