Advances in Mathematical Sciences and Applications
Vol. 30, No. 2 (2021), pp. 415–427

GAKKOTOSHO
TOKYO JAPAN

REMARKS ON NON-UNIQUENESS FOR A TRANSPORT EQUATION WITH A FRACTIONAL DIFFUSION

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Abstract. In this paper we extend the results on non-uniqueness for a transport equation to that with a fractional diffusion. We construct examples for which uniqueness of weak solutions fails when the velocity field is divergence-free but irregular. By using the convex integration method, it can be proved that there exist infinite pairs which satisfy such an equation for given initial data.

Communicated by Yoshikazu Giga; Received August 30, 2021.
AMS Subject Classification: 35F50, 35A02, 35Q35.
Keywords: weak solution, convex integration, non-uniqueness, transport equation, fractional diffusion.