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Tam Do* (tam.do@rice.edu), **Alexander Kiselev**, **Lenya Ryzhik** and **Changhui Tan**.

Global regularity for the fractional Euler alignment system.

We study a pressureless Euler alignment system with nonlinear density-dependent alignment term. The system originates from Cucker-Smale flocking models. The alignment term is dissipative and has the same order as the fractional Laplacian $(-\Delta)^\alpha$, $\alpha \in (0, 1)$. The corresponding system with the fractional Laplacian is the fractional Burgers equation, which forms shocks in finite time. We show solutions are globally regular for all $\alpha \in (0, 1)$. (Received March 17, 2017)