

# Liquid crystal inertia in the Q-tensor framework

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One of the most intriguing aspects of liquid crystals, from both a physical and mathematical point of view concerns the presence of inertia, manifested as a second-order material derivative.

Usually, based on physical considerations, the inertia is considered to be negligible and dropped from the equations, which conveniently simplifies the equations significantly.

We consider one of the simplest cases in which the inertia is kept, within the Qian-Sheng formalism, and provide a basic well-posedness result. We further consider some simple instances of a mysterious type of solution: the Ericksen twist waves, and analyze some of its aspects.