

# Analysis and PDE Seminar

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TITLE: Regularity structure of conservative solutions to the Hunter-Saxton equation

*Date* : September 16th, 2021 (Thursday)

*Time* : 10am-11am (Hong Kong time)

11am-12noon (Korea time)



*Link to ZOOM* : <https://unist-kr.zoom.us/j/3170659442>

Meeting ID : 317 065 9442

Password : APDE21

**Abstract.** The Hunter-Saxton equation is a one dimensional PDE used to study a nonlinear instability in the director field of a nematic liquid. In this talk, we discuss a characteristic method for the regularity structure, the global-in-time existence and uniqueness of energy conservative solutions to the Hunter-Saxton equation. In particular, we show that singularities for the energy measure may only appear at at most countably many times, and are completely determined by the absolutely continuous part of initial energy measure. The temporal and spatial locations of singularities are also determined explicitly by initial data. The analysis is based on using the method of characteristics in a generalized framework that consists of the evolutions of solution to the Hunter-Saxton equation and the energy measure. This is a joint work with Hao Liu and Tak Kwong Wong.

*All are welcome*

This is a joint activity organized by Department of Mathematics, The Chinese University of Hong Kong, Hong Kong; Department of Mathematics, Institute of Mathematical Research, Research Division of Mathematical and Statistical Science, The University of Hong Kong, Hong Kong; and Department of Mathematical Sciences, Ulsan National Institute of Science and Technology, Korea. More details can be found in [https://hkumath.hku.hk/~imr/event/CUHK\\_HKU\\_UNIST\\_Analysis\\_and\\_PDE/index.php](https://hkumath.hku.hk/~imr/event/CUHK_HKU_UNIST_Analysis_and_PDE/index.php).

