

Interaction of dispersive effects and regularity in evolution equations

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In this talk, we investigate how different dispersive effects interact to establish Kato's smoothing effect and the propagation of regularity principle. To this end, we consider a generalized combined dispersion model encompassing several evolution equations, including the Korteweg–de Vries (KdV) equation, the Benjamin equation, the Kawahara equation, and the seventh and ninth-order extensions of KdV. Our main result shows that the highest-order dispersion governs the model's fractional local gain of regularity.

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