ISSUES OF INSTABILITY AND BLOWUP IN SUPERCRITICAL DISPERSIVE PDE

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In this talk, we give an overview of recent results for nonlinear dispersive PDE and related fluid models where quantitative estimates play a key role. We will describe new bounds for the defocusing energy-supercritical Nonlinear Schrödinger equation (NLS) and use these to give a universal blow-up criteria which goes below the scaling invariant threshold. These results are in line with a recent breakthrough construction of finite-time blow-up solutions, and in particular give the first generic result distinguishing potential defocusing blow-up phenomena from many of the known examples of blow-up in the focusing setting. At the end of the talk, we will briefly describe applications to related models.