



## Complex Wave Dynamics on Thin Films: Volume 14 (Hardback)

By H.C. Chang

ELSEVIER SCIENCE TECHNOLOGY, United Kingdom, 2002. Hardback. Condition: New. Language: English . Brand New Book. Wave evolution on a falling film is a classical hydrodynamic instability whose rich wave dynamics have been carefully recorded in the last fifty years. Such waves are known to profoundly affect the mass and heat transfer of multi-phase industrial units. This book describes the collective effort of both authors and their students in constructing a comprehensive theory to describe the complex wave evolution from nearly harmonic waves at the inlet to complex spatio-temporal patterns involving solitary waves downstream. The mathematical theory represents a significant breakthrough from classical linear stability theories, which can only describe the inlet harmonic waves and also extends classical soliton theory for integrable systems to real solitary wave dynamics with dissipation. One unique feature of falling-film solitary wave dynamics, which drives much of the spatio-temporal wave evolution, is the irreversible coalescence of such localized wave structures. It represents the first full description of a hydrodynamic instability from inception to developed chaos. This approach should prove useful for other complex hydrodynamic instabilities and would allow industrial engineers to better design their multi-phase apparatus by exploiting the deciphered wave dynamics. This publication gives a comprehensive...



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