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Sommario/riassunto

This book studies solutions of the Polubarinova–Galin and Löwner–Kufarev equations, which describe the evolution of a viscous fluid (Hele-Shaw) blob, after the time when these solutions have lost their physical meaning due to loss of univalence of the mapping function involved. When the mapping function is no longer locally univalent interesting phase transitions take place, leading to structural changes in the data of the solution, for example new zeros and poles in the case of rational maps. This topic intersects with several areas, including mathematical physics, potential theory and complex analysis. The text will be valuable to researchers and doctoral students interested in fluid dynamics, integrable systems, and conformal field theory.