

Meeting: 1003, Atlanta, Georgia, SS 31A, AMS-SIAM Special Session on Integrable Systems and Special Functions, I

1003-35-814 **Mark Mineev-Weinstein*** (mariner@lanl.gov), Applied Physics Division, Group X-7,
MS-P365, Los Alamos National Laboratory, Los Alamos, NM 87545. *Laplacian Growth and
Whitham Equations in Soliton Theory.*

The Laplacian growth (the Hele-Shaw problem) of multi-connected domains in the case of zero surface tension is proven to be equivalent to an integrable systems of Whitham equations known in soliton theory. The Whitham equations describe slowly modulated periodic solutions of integrable hierarchies of nonlinear differential equations. Through this connection the Laplacian growth is understood as a flow in the moduli space of Riemann surfaces. (Received September 29, 2004)