Pointwise Green Function Bounds and Long-Time Stability of Large-Amplitude Noncharacteristic Boundary Layers

Shantia Yarahmadian *
*Indiana University, USA
e-mail syarahma@indiana.edu

Kevin Zumbrun
*Indiana University, USA
e-mail kzumbrun@indiana.edu

Using pointwise semigroup techniques of ZumbrunHoward and MasciaZumbrun, we obtain sharp global pointwise Green function bounds for noncharacteristic boundary layers of arbitrary amplitude. These estimates allow us to analyze linearized and nonlinearized stability of noncharacteristic boundary layers of one-dimensional systems of conservation laws, showing that both are equivalent to a numerically checkable Evans function condition. Our results extend to the large-amplitude case results obtained for small amplitudes by Matsumura, Nishihara and others using energy estimates.