

Abstract Submitted
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Laminar-to-Turbulence Transition in Hypersonic Boundary Layers: Role of Dilatational Waves CUNBIAO LEE, CHUANHONG ZHANG, YIDING ZHU, QING TANG, HUIJING YUAN, JIEZHI WU, SHIYI CHEN, MOHAMED GAD-EL-HAK, Peking Univ — A Mach 6 quiet wind tunnel experiment is carried out to study the turbulent transition in hypersonic boundary layer. It is found that the second instability acoustic mode is the key modulator of the transitional process which experiences a rapid growth and a very fast annihilation due to the effect of bulk viscosity. The second mode interacts strongly with the first vorticity mode to directly promote a fast growth of the latter and lead to immediate transition to turbulence.

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