**Structure of Streaks Near the Leading Edge Singularity in a
Blasius Boundary Layer** JOSE MANUEL VEGA, MARIA HIGUERA, ETSI
Aeronáuticos. UPM — Streaky (S) perturbations (also called Klebanoff modes) in a
Blasius boundary layer are examined in the vicinity of the leading edge singularity.
Understanding the mathematical structure of S-perturbations in this limit requires
to consider two eigenvalue problems, whose eigenfunctions exhibit two well separated
scales in the normal direction: (i) $\zeta = y/\sqrt{(x)} \sim 1$ and (ii) $y = \zeta\sqrt{(x)} \sim 1$, where
ζ is the usual self similar variable in the boundary layer and x is the streamwise
coordinate. These eigenvalue problems were considered by Luchini (JFM 1996), who
calculated some of their solutions. The remaining solutions are calculated and used
to obtain approximations of the relevant solutions of streamwise evolving parabolic
problem that provides S-perturbaions in this limit. Some of the results are also
relevant in the restricted 2D problem.

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