ENGINEERING ONLINE

Lecture Notes

Course Number:

517

Instructor:

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Lecture Number:



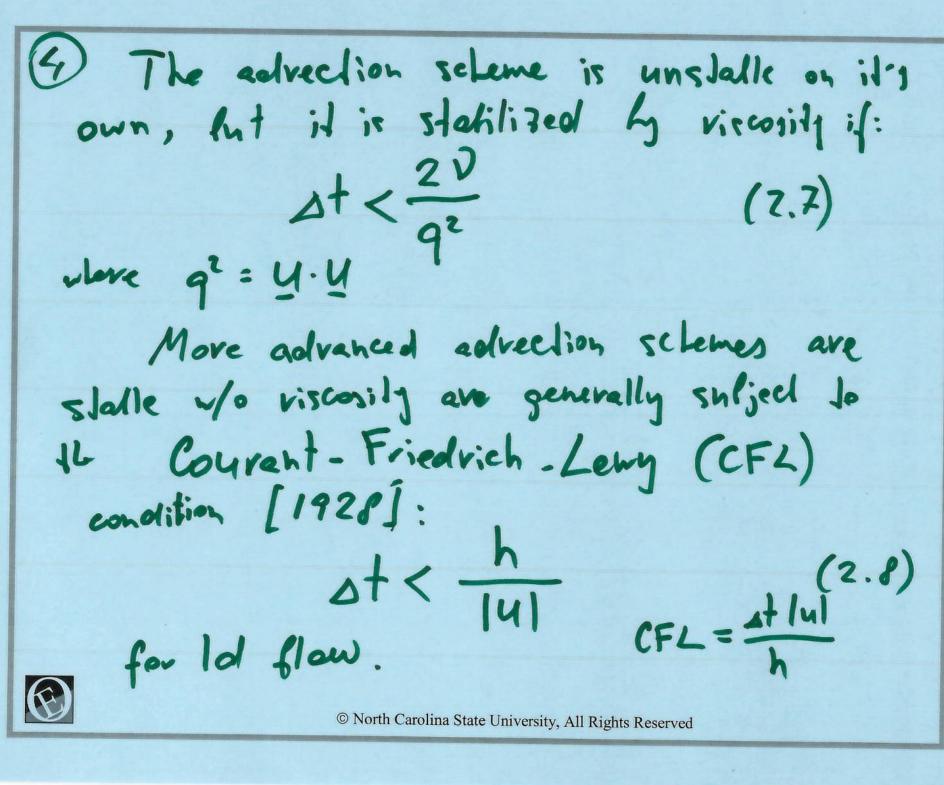
1) In the projection method we split the momentum equation in 2 facts by introducing temp. veheily: U* such thed: U"-"=""=""+"-" The first fart is a predictor step where the temp. relocity is found by ignoring effect of france: $\frac{1}{\Delta t} = -A_h(u'') + VD_h(u'') + f_i' \quad (2.3)$ Second step: (projection step): ne edd lk premure fradion: (2.4)

(2) To find the premure, we use (2.2) to eliminate until from (2.4): 产好pht]=一大了" (2.5)Sequence: , (2.3); (2.5); (2.4) un ux pati unti Note: we do not enume that Vi. 4 = 0 This time interretion algorithm is subject to time slep limitations.



3) If statial derivatives are approximated using conserved second-order efforch (hill discum Ader), stellity enelysis considering only viscous terms requires: h? Dt < CD ID (2.6) Cu = 4 for 2d flows Cy = - for 3d flows h - grid spacing







- 2d & 3d the condition applies in each direction
- for unsteady flows, CFL condition is not the most severe
 - (2.6) is more stringent for slow flows
 - when s.t. is importent, it is becomery to limit the this so a capillary wave travels less than a stid size in 1ths.



