



APPLICATION OF BOUNDARY LAYER THEORY IN OPEN CHANNEL FLUME DESIGN

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Abstract- In accordance with the problem of the need for calculation formula of the straight wall flume flow in open channel by experiment, the method of the boundary layer is proposed; Analysis with boundary layer displacement thickness is studied, and the energy equation, continuity equation and the theory and critical depth of flume flow coefficient, velocity coefficient is deduced using the boundary layer theory and the flow calculation formula is given; Through iterative algorithm, the flow can be calculated theoretically. With four different kinds of parameters in the U-shaped channel flume algorithm are verified, the results show that the theoretical calculation corresponds to the actual observation. Therefore, the boundary layer theory to calculate the flow of the flume is not only studied the amount of water problems in theory, simplifies the complicated test calibration, but also has important practical value.

Index terms: Boundary layer theory; Open channel; Flow measurement; Flow calculation;