عنوان مقاله:

Investigating different models for estimation oflongitudinal velocity distribution in rectangular openchannels

محل انتشار:

همایش ملی الکترونیکی دستاوردهای نوین در علوم مهندسی و پایه (سال: 1393)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

Determination of velocity distribution is one of the basic aspects in open channel flow studies. It directly relates to various flow properties like shear stress distribution, secondary flows, channel capacity measurement, and other flow entities. The knowledge of velocity distribution helps to know the velocity magnitude at each point across the flow cross-section. It has been found that velocity distribution in various types of channels varies with the shape, type and patterns of channels. Thus, it is essential to study various methods used for estimation of velocity distribution in various natural and artificial open channels. In the present work, several models developed for velocity distribution in open channels are discussed (namely Dip Modified Log law, full Dip Modified Log Wake law, and total Dip Modified Log Wake law). All these models are based on different relations available for eddy viscosity. Available data measured in a rectangular lab channel was used to examine the accuracy of the models in estimating the longitudinal velocity profile in narrow channels. The results show that all models are able to describe the velocity-dip phenomenon and velocity negative gradient near the free surface; however DML-law provides a better description of the velocity profile curve in narrow channels and the dip phenomena and agrees the best with the experimental results and is able to predict the position of dip phenomenon more accurate than others. Also it the value of errors calculated is the least .for DML-law

کلمات کلیدی:

velocity distribution, dip phenomenon, eddy viscosity, narrow open channel