

عنوان مقاله:

Numerical investigation of two phase flow over Semi-elliptical weir

محل انتشار:

چهارمین کنفرانس بین المللی پژوهش های نوین در علوم مهندسی و تکنولوژی (سال: 1394)

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خلاصه مقاله:

Side weirs are structures located in the path of water open channels to protect the main channel of unprecedented phenomena such as overflow or to control the flow rate of passing water. A side weir is placed between main channel and secondary channel. Excess water is gathered by the side weir and flow out from the secondary channel. Many types of side weir with different geometries are proposed, each of which has certain benefits over the others. In light of simple geometry of rectangular side weirs, this type of side weirs has been investigated in many researches and many theoretical or empirical equations have been proposed to determine flow characteristics of rectangular side weirs. On the other hand, no theoretical equation is proposed for advanced geometries such as semi-elliptical weirs. Hence, one way to determine the fluid flow statues in semi-elliptical weirs is to perform experimental studies. Another way that in this study is side weir is placed between main channel and secondary channel. Excess water is gathered by the side weir and flow out from the secondary channel. Many types of side weir with different geometries are proposed, each of which has certain benefits over the others. In light of simple geometry of rectangular side weirs, this type of side weirs has been investigated in many researches and many theoretical or empirical equations have been proposed to determine flow characteristics of rectangular side weirs. On the other hand, no theoretical equation is proposed for advanced geometries such as semi-elliptical weirs. Hence, one way to determine the fluid flow statues in semi-elliptical weirs is to perform experimental studies. Another way that in this study is employed and here is shown to have superior accuracy and simplicity over other theoretical or experimental methods, is numerical simulation. Four semi-elliptical weirs with different geometries are simulated in this study. Furthermore, one rectangular side weir is numerically investigated at different flow rates. Simulation is performed by ANSYS CFX software. Check the validity of the results; numerically derived results are compared to the previously available experimental data. Comparison indicated that numerically derived results not only follows the trend of experimental results, but also have negligible .error value

کلمات کلیدی:

Side weir, Semi-elliptical weir, Numerical simulation

