

電波流速儀與旋葉式流速儀於清水流之流速觀測研究

黃宏斌^[1] 謝孟荃^[2]

摘 要 當野溪水深不大或颱風來臨水流湍急時，一般旋葉式流速儀也無法完全浸沒於水中或可能被湍急之水流帶走，採用非接觸式之電波流速儀便可以克服野外觀測之難題。

本研究利用渠槽試驗針對電波流速儀所測出之表面流速與旋葉式或電磁式流速儀所測得之水流點流速值進行分析，在 5.2~31.7cm 之水深；雷諾數為 10,000~195,000，得到電波流速儀觀測清水流況下筆直河川之修正係數，和平均流速與表面流速間之迴歸關係式。未來則可進行不同泥沙濃度含砂水流情況下表面流速與平均流速間之率定，使其更符合台灣山地河川流速觀測之特性。

關鍵詞：電波流速儀、旋葉式流速儀、表面流速、渠槽試驗。

Velocity Measurement by Radio Current Meter and Propeller Velometer in Clean Water

Hung-Pin Huang^[1] Meng-Chyung Shieh^[2]

ABSTRACT When the water depth is not deep enough or torrent occurs in a wild creek, a traditional propeller velometer can not put into the water body completely or could be carried away by torrent, selecting a radio current meter could conquer this problem in the field.

This study, associated with the flume experiment, used a radio current meter to measure surface velocity and a propeller velometer as well as an electromagnetic velometer to measure point velocity. Under the conditions of 5.2 to 31.7 cm of water depth, 10,000 to 195,000 of Reynolds Number, this study got the results of correction factor for the radio current meter in clean water as well as straight channel and regression equation of mean velocity and surface velocity. In the future, the relationship between surface velocity and mean velocity in different sediment concentration is going to be carried out to keep with the character of velocity measurement in mountainous creeks in Taiwan.

Key Words: Radio Current Meter, Propeller Velometer, surface velocity, flume experiment.

(1) 國立台灣大學生物環境系統工程學系教授兼水工試驗所特約研究員
Professor, Department of Bioenvironmental Systems Engineering and Hydrotech Research Institute, National Taiwan University, Taipei 106, Taiwan, R. O. C.

(2) 國立台灣大學生物環境系統工程學系碩士(通訊作者)
Master, Department of Bioenvironmental Systems Engineering, National Taiwan University, Taipei 106, Taiwan, R. O. C.
(Corresponding Author)
E-mail: r91622005@ntu.edu.tw