

# **APPLICATION OF THE ULTRASONIC DOPPLER VELOCIMETRY TO THE FREE SURFACE TURBULENT FLOW**

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## **Abstract:**

Since a long time, the turbulent speed variation, in open canals, has given rise to a big interest to many researchers. In fact, the study of phenomena generating from turbulence inside a flow can best help the comprehension of complex phenomena such as erosion and solid transport. The considered solutions will allow a mastery of the hydraulic works conception and will contribute to costs optimisation. It has been shown that the two last decades development has allowed putting on speed measure techniques offering more precise analysis possibilities. Actually, the Laser Doppler Velocimetry (LDV) and the Ultrasonic Doppler Velocimetry (UDV) are characterized by a nonintrusive character and a measure volumes analysis with a great space and time precision. The present work is a contribution to the behaviour study of the speeds' profile and that of the friction coefficient of a free permanent and turbulent flow in a canal by the application Ultrasonic Doppler Velocimetry in pulsed mode using instrument DOP 1000 (Model 1032).

**Key words:** velocimetry; turbulence; UDV; flow, friction velocity.