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## **Sensitivity of the flow to the inclination of a single submerged groyne in a curved flume**

Bahaeldeen A. ZAID<sup>1</sup> and Katinka KOLL<sup>1</sup>

<sup>1</sup>Leichtweiß-Institut für Wasserbau, TU Braunschweig, Germany  
e-mail: b.zaid@tu-braunschweig.de

### ABSTRACT

In order to investigate the effect on the flow field due to small changes in the inclination of a single submerged groyne, laboratory tests have been conducted. A double curved S-flume with a length of 26 m, width of 2.4 m and depth of 0.4 m was used. The investigations were done at a reference inclination of  $60^\circ$  for a single submerged groyne. The inclination was then varied by  $\pm 5^\circ$  and  $\pm 10^\circ$ . The groyne width and height as well as the hydraulic conditions (discharge of 130.6 l/s and water depth of 10 cm) were kept constant to ensure that the effect is only due to the change in the inclination. The groyne was installed in the first cross-section of the first curve. The 3D flow field was measured using a Nortek Vectrino Plus in nine cross-sections with seven vertical profiles each. The total flow measurement points were 325 in each run. The results of the experiments have shown no significant changes in the flow field due to the change of inclination up to  $\pm 10^\circ$  given that the projected length and the hydraulic boundary conditions were kept constant. Comparison of the flow field with and without groyne revealed decreasing velocities at the outer bank and increasing velocities at the inner bank supporting the purpose of the structure which is bank protection.