ANALYSIS OF RIVER MORPHOLOGY IN A SEDIMENT DISTRIBUTION PATTERN

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ABSTRACT

In this final sedimentation model was developed mathematically using finite volume method approach. Sedimentation model that was built consisted of two parts, the hydrodynamic flow of rivers and river morphology. In the hydrodynamic flow of the river depicted on the variables involved in river flow equation, whereas in river morphology is described on the sedimentation process based channel as a result of flow behavior. In the implementation results of the output of the hydrodynamic flow of the flow velocity and depth river be input on the river morphology.

In this study discusses the distribution pattern of sediments on the river morphology are very curved semicircular, using Meshless Local Petrov-Galerkin (MLPG) with the approach of Moving Least Square (MLS) as a function of shape and weighting functions order spline-4 and functions as Heaviside function test. With the initial depth variation h = 0.1 to h = 0.5 for the same initial velocity v = 0.1, height of sediment in straight flow increased an average of approximately 0.001972, while for the flow of cornering an average increase of about 0.00013. Likewise, when given initial velocity v = 0.1 to 0.5, with the same depth h = 0.3 h, the height of sediment in straight flow
decreased by an average of about 0.02156, while the flow rate has decreased by about 0.01657. From the simulation result, the pattern of sediment distribution along the flow is influenced by the depth of the river, the river velocity and river morphology.

Key word: Meshless local Petrov-Galerkin (MLPG), Moving Least Square (MLS), Heavyside function.