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## **Mathematical modelling of sand-gravel bed evolution in one dimension**

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### **ABSTRACT**

In the paper a one-dimensional riverbed model is proposed. In the model the bed load sediment transport is described by the analytical formula. This formula doesn't contain a phenomenological parameters and takes into account the influence of the bed shear stress, the local bed slope, granulometrical and physical-mechanical parameters of the bed material. Three types of riverbed problems are solved by using the proposed model: the problem of bed degradation under the influence of the purified water flow, the problem of bed aggregation and the problem of the trench evolution under the influence of the transit flow. The comparison analysis of the predicted data with the established experimental data and the data obtained by the other models was carried out. It was shown that the proposed model adequately describes the bed evolution in all three problems, the accuracy of the predicted data is sufficient for practice.