

## EROSION OF MODEL RIVER BEDS COMPOSED OF SPHERICAL PARTICLES

Erosion of a model river bed composed of spherical particles is analyzed in the article. The authors provide their summarized analysis of forces applied by the water flow onto particles of the upper layer of the model bottom soil composed of spherical particles. The authors have proven that the force producing the hydrostatic surcharge is determined by the dimensions of areas of tight particle-to-particle contacts, where a thin film of unfree water is incapable of transmitting hydrostatic pressure. This force must be considered if the particle size is below 0.03 mm. The authors have identified that the principal force responsible for the elevation of particles is the lifting force caused by the flow asymmetry in the upper soil layer. If the velocity demonstrated on the tops of particles of the upper soil layer is considered as the characteristic velocity, criterial condition of elevation of particles by the water flow is obtained as the ratio of this velocity to the hydraulic size of particles which is equal to one. The authors provide their explanation backing the above conclusion.

**Key words:** model river bed, erosion, spherical particles, particle velocity, particle elevation criteria.

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