

Simplified Models for Numerical Methods

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ABSTRACT

There are many different models of frontal loader. But they are deterministic. All parameters in them are constant values. But in reality some of them are stochastic. Our goal is to improve the working process of loader. At first we optimize a mass of a loader. The optimal mass of loader is coupled with many problems for example: support of maximum productive capacity of loader for minimum input energy; design the best linear dimensions of loader and the optimal geometrical form of bucket, - and so on. The working cycle of loader includes a number of operations: to grip a material, to move it to the place of unloading and to return back to the starting position. Previously it was considered the formulae for determination the mass of the bucket loader with constant parameters. We consider two of them are stochastic: specific resistibility of the entering the bucket in the material pile and a distance of displacement of loader. It is naturally to suppose they are normal distributed. Using the methods of the theory of probability, get the law of distribution of the loader mass. It allows by the numerical method to find the optimum value of the loader mass and then to solve all above mentioned coupled problems. These results can be transferred on other technical models and systems using the method of similarity.

REFERENCES

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