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The New Statement of Problem of Unbalance Identification

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The algorithms of inverse problem solution of rotor unbalance identification in new statement is offered. This statement of problem permits to obtain the most probable solution. The vibrations of rotor supports in two mutually perpendicular directions during the work for a few rotor rotations as the initial information are used. Tikhonov regularization method is applied for solution of this ill-posed problem taking into consideration the error of mathematical model. The numerical calculations of examples are given to illustrate these algorithms. The suggested method permits to evaluate all characteristics of unbalance on working machinery in real time. It can be used for technical diagnostics of unbalance and for balancing of rotors in their own bearings. The following might be considered as the main advantages of such approach: i) there is no need to use the testing signals; ii) the stability of diagnostic results.

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