«GROP-CANONICAL» METHOD OF AVERAGING FOR STRONGLY NON-LINEAR MECHANICAL SYSTEMS CLOSE TO EXACTLY INTEGRABLE

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Abstract. *Justified the canonical method of averaging for strongly non-linear mechanical systems close to the exactly integrable. The use of variables grop-action taken in the practice of quantum-mechanical calculations. The analysis of the movement of the flexible shaft with an unbalanced disc/drum, symmetrically located with respect to the supports.*

So considered in this case study of the oscillations of the flexible shaft with symmetrically (relative to its supports) of the saturated disc/drum shows that finding a common solution of nonlinear canonical system involves rather cumbersome calculations when finding the parameters of the canonical transformations.

In some cases, apparently, more simple solution could be perform a canonical transformation on the principle of averaging.

Key words: ***variable «grop-action», quantum mechanics, canonical averaging, significant nonlinearity, mechanical system***