

## Experimental and numerical investigations of a pendulum driven by a low-powered DC motor

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*Abstract:* The work is a continuation of numerical and experimental investigations of a system consisting of a single pendulum with the joint horizontally driven by the use of a crankset and DC motor. The power supplied to the DC motor is relatively small when compared with our earlier investigations, which results in clear return influence of the dynamics pendulum on the DC motor angular velocity and much more rich bifurcation dynamics of the whole system, including regions of chaotic behaviour. In the experiments, the motor is supplied by the use of different but constant in time voltages. A series of experiments allow for accurate estimation of the model parameters and, in the further step, for prediction of the real system behaviour, also for other functions representing input voltage, including the time-varying ones.

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