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**DESIGN DEVELOPMENTS OF VIBRATION-DRIVEN MOBILE ROBOTS<sup>1</sup>**

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***Abstract:** In this paper three new design ideas and the corresponding prototypes built recently are reported and discussed. The prototype robots are capable of achieving forward and backward motion by still using one-way bearings. In these designs the one-way bearings are installed out of the wheel's hubs and are activated either electro-magnetically or electro-mechanically to accomplish forward or backward motion. For comparison reasons, regarding the robot's performance, all prototypes employ the same propulsion mechanism as that in the first and the second designs discussed in articles [Loukanov, I.A. 2014b] and [Loukanov, I.A. 2015] respectively.*

***Keywords:** Resonance vibrations, Inertia propulsion, One-way bearing, Spring system, Linear damping.*

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