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Improving functionality of absorber/harvester system by a smart adaptive suspension

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Abstract: Vibration reduction has been a major problem for researcher. The different control method can increase an effectiveness of the vibration mitigation. On the other word, the vibration can be used to energy harvesting. A typical vibration energy harvesting system consists of a excited mechanical system and a transducer which converts the vibration energy into electric energy mechanism. In this work, a vibration absorber-harvester is designed and the interaction between its vibration absorption ability and harvesting capability is investigated. The pendulum absorber/harvester is mounted to the oscillator leads to the autoparametric absorber/harvester system. In order to increase the effectiveness, the adaptive suspension consisting of the magnetorheological damper and shape memory spring is applied. To describe the compromise region between the vibration mitigation and energy harvesting the new criterions are proposed. Acknowledgments: The project/research was financed in the framework of the project Lublin University of Technology-Regional Excellence Initiative, funded by the Polish Ministry of Science and Higher Education (contract no. 030/RID/2018/19).

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