

Tension-based, wearable vibroacoustic device

February 28 2017



Credit: The proposed device, Hapbeat. Credit: Tokyo Institute of Technology

Excitement felt when listening to music is due to both the sounds heard and, importantly, the vibrations felt by the body.

Furthermore, in spite of potentially favorable effects of vibroacoustic devices for listening to [music](#) , they are only used in special facilities and are not yet popular for the daily musical experience.. A reason could be that conventional vibroacoustic devices require a considerable size and weight to transmit enough vibrations to a user's body to be effective because they use inertial forces to drive a user's body.

Now, Yusuke Yamazaki and Shoichi Hasegawa at the Tokyo Institute of Technology have invented a new mechanism for vibroacoustic device, which uses tension forces to transmit vibrations. The device consists of two motors and a string and can transmit strong and high fidelity acoustic vibrations to a user's body. The motors generate vibrations up to 600Hz and the string transmits this [vibration](#). The researchers "believe this device has potential to become a new standard tool for music appreciation".

User tests showed that the proposed [device](#) transmits vibrations to wider areas and gives better subjective impressions than conventional vibro-tactile devices.



Transparent view - Coreless DC motors drive a stiff string. Credit: Tokyo Institute of Technology

More information: Bello F., Kajimoto H., Visell Y. (eds) Haptics: Perception, Devices, Control, and Applications. EuroHaptics 2016. *Lecture Notes in Computer Science*. [DOI: 10.1007/978-3-319-42324-1_27](https://doi.org/10.1007/978-3-319-42324-1_27)

Provided by Tokyo Institute of Technology

Citation: Tension-based, wearable vibroacoustic device (2017, February 28) retrieved 7 July 2024 from <https://phys.org/news/2017-02-tension-based-wearable-vibroacoustic-device.html>

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