Research (What is it about?)	**Wobbling induced by pedestrian-bridge interactions**
UNN authors	*Belykh V.N.*
We find (The result)	It is shown that the pedestrian-bridge interactions can induce significant wobbling of bridge even in the absence of resonance
Abstract	Several modern footbridges around the world have experienced large lateral vibrations during crowd loading events. The onset of large-amplitude bridge wobbling has generally been attributed to crowd synchrony; although, its role in the initiation of wobbling has been challenged. To study the contribution of a single pedestrian into overall, possibly unsynchronized, crowd dynamics, we use a bio-mechanically inspired inverted pendulum model of human balance and analyze its bi-directional interaction with a lively bridge. We demonstrate that pedestrian-bridge interactions can induce bistable lateral gaits such that switching between the gaits can initiate large-amplitude wobbling. We also analyze the role of stride frequency and the pedestrian's mass in hysteretic transitions between the two types of wobbling. Our results support a claim that the overall foot force of pedestrians walking out of phase can cause significant bridge vibrations.

Representative articles 2016-2017, quartiles	1. *Belykh I.V., Jeter R., Belykh V.N.* Bistable gaits and wobbling induced by pedestrian-bridge interactions. Chaos. **26**:116314 (2016).	Q1
	Q-index (Qi) of the result	**4**

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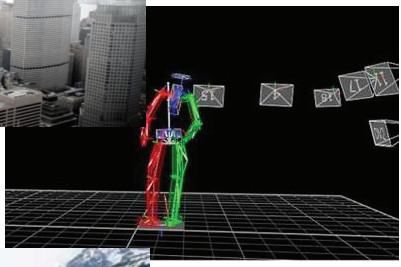
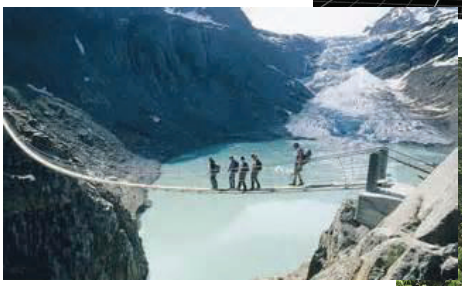
Application a bio-mechanically inspired pendulum model of human balance ...



to pedestran-bridge interaction...



make it possible to find the conditions of strong ***lateral wobbling*** of bridge.

The impressive example: London Millennium bridge wobbing during mass procession on 12 June 2000. People call it "*The Wobbly Bridge*".