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**Analytical model of a butterfly micro-swimmer**[1] MAKOTO IIMA, ALEXANDER MIKHAILOV — We propose a simple mechanical model consisting of two spheroids (wings) connected by a single hinge. Unlike micro-swimmers proposed so far, this model has just one hinge, but its motion allows two degree of freedom, corresponding to open-close and twisting. Its non-reciprocal operation cycles resembles conformational motions characteristic for real protein machines and similar to the propulsion pattern of a butterfly. The net velocity and the net stall force are calculated analytically and their dependence on the model parameters is discussed.

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