New Nature-Inspired Cycloidal Propeller for Low-Reynolds-Number Hovering Flight

Prototype (Research Project)

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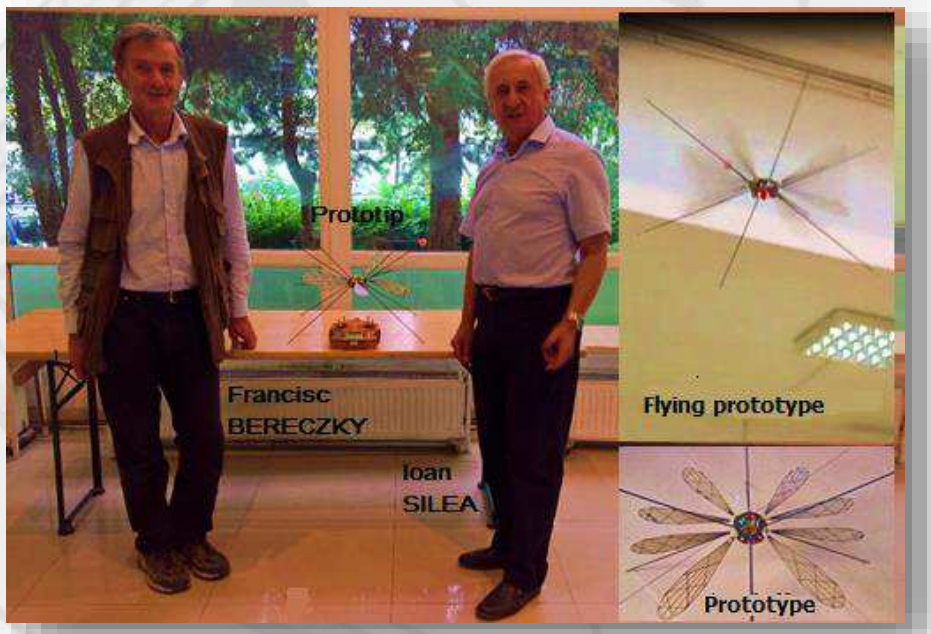
A new type of pivoting-blade cycloidal propeller having the appearance of damselfly wings, which can equip aircraft with vertical take-off and landing capability was designed and tested. This propeller is emerging as an alternative solution for electrically powered Planetary Aerial Vehicles capable ofoperating in the rarefied atmosphere of Mars.

Pivoting-blade cycloidal propeller and devices equipped with it



Authors and a prototype for testing the pivoting-blade cycloidal propeller

The theoretical analysis and experimental results proves that both forces (lift and drag) contributes to the net vertical force, and the contribution of drag is at least 50%. The results, recognized by the world of research, were published in the AIAA Journal - a scientific journal of the American Institute of Aeronautics and Astronautics, covering all areas of aeronautics and astronautics, especially in terms of new theoretical and experimental developments.

The article and auxiliary materials (films, pictures) can be obtained for a fee by accessing: https://arc.aiaa.org/doi/abs/10.2514/1.J057270

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