

Abstract Submitted  
for the DFD12 Meeting of  
The American Physical Society

**Three-dimensional flow about penguin wings** FLAVIO NOCA, BASSEM SUDKI, MICHEL LAURIA, hepia — Penguins, contrary to airborne birds, do not need to compensate for gravity. Yet, the kinematics of their wings is highly three-dimensional and seems exceedingly complex for plain swimming. Is such kinematics the result of an evolutionary optimization or is it just a forced adaptation of an airborne flying apparatus to underwater swimming? Some answers will be provided based on flow dynamics around robotic penguin wings. Updates will also be presented on the development of a novel robotic arm intended to simulate penguin swimming and enable novel propulsion devices.

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Date submitted: 03 Aug 2012

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