

Abstract Submitted  
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**Reducing turbulent boundary layer drag by a sustainable thin-air film**<sup>1</sup> CONG WANG, DAVID JEON, MORTEZA GHARIB, Caltech — Reduction of hydrodynamic frictional drag through introduction of air bubbles or films at the wall regions has been tried by several groups in the past. The main challenge for these approaches has been to sustain the air bubble or film under high turbulent velocity fluctuations. We will report a novel technique that allows maintaining stable oscillating air films over solid surface in order to obtain large drag reduction effect. Based on our DPIV results, we will present a potential mechanism for the Reynolds stress suppression in the near wall region.

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