

Abstract Submitted  
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**Harbor seal whiskers synchronize with upstream wake over a range of distances** HEATHER BEEM, MICHAEL TRIANTAFYLLOU, MIT — Harbor seal whiskers have been shown to exhibit unique vibration properties as they encounter vortex wakes [1]. Seals may use this information to detect hydrodynamic trails left by fish prey. A scaled model, which captures the undulatory morphology of the harbor seal whisker and is designed to freely vibrate, is tested here to explore these properties in more detail. This model is towed downstream of a larger cylinder, which generates a vortex wake. Effects of downstream distance, lateral distance, and diameter ratio between the two objects are explored. Frequency measurements are collected simultaneously through use of a pressure sensor placed in the wake. Cross-correlation of the whisker motion and cylinder wake pressure provides evidence that frequency synchronization holds for a range of separation distances and wake generator sizes.

[1] Beem, H., Triantafyllou, M. (2013). “Harbor seal whiskers synchronize with frequency of upstream wake,” *Bulletin of the American Physical Society* 58.

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