

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Rocking the boat: Auditory localization of ground-borne vibrations in snakes¹ J. LEO VAN HEMMEN, Physics Department, TU Munich — Experiments [1] have shown that sand-dwelling desert snakes can localize prey in the absence of visual, chemosensory, and infrared cues. Instead, prey-generated surface waves traveling along the substrate surface provide the necessary information for a snake to estimate the stimulus position. The snake's inner ear is mechanically coupled to the lower jaw through a lever construction. Moreover, the left and right jaws in snakes are only loosely linked, thus providing the possibility of detecting surface vibrations and locating a stimulus through interaural time differences. Using the theory of floating bodies as an approximation of a snake jaw resting on a sandy substrate, we explicitly calculate [2] the response of the lower jaw to incoming surface waves and show that the sensitivity of the snake ear suffices to allow prey localization on the basis of interaural time-of-arrival differences. Refs.: [1] B.A. Young and M. Morain, *J. Exp. Biol.* **205** (2002) 661; [2] P. Friedel, B.A. Young, and J.L. van Hemmen, TU Munich preprint (2007).

¹Supported by BCCN Munich & DFG (HE 3252/1-4)

J. Leo van Hemmen
TU Munich

Date submitted: 20 Nov 2006

Electronic form version 1.4