

From optic flow to visual orientation and navigation as well as neuroimaging

Initiative: Lichtenberg - Professuren

Bewilligung: 21.08.2019

Laufzeit: 5 Jahre

Projekt-Website: www.marine-science-center.de/team2.html

The focus of the research program is on underwater optic flow perception in pinnipeds which probably serves for underwater locomotion, orientation, and navigation, even and especially in turbid waters. Psychophysical experiments will assess whether pinnipeds are able to cope with specifics of the underwater optic flow situation such as violations of environmental rigidity and whether they can estimate specific parameters, besides deviations from their heading, from optic flow such as angles turned, and distances travelled. These parameters are crucial for successful path integration, a putative useful tool available in the presence and absence of external cues. Research will also extend into the direction of (visual) orientation and navigation in general conducting experiments in virtual environments thereby trying to unravel which mechanisms pinnipeds use to orient and navigate in the open ocean. The results of the virtual environment as well as of open-field experiments will then help to model the behavior of wild animals at sea, thereby linking lab experiments with wildlife research. In addition, the brain areas involved during optic flow perception shall be revealed using functional magnetic resonance imaging in combination with classic brain neuroanatomy.

Projektbeteiligte

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Open Access-Publikationen

Visual timing abilities in a harbor seal (*Phoca vitulina*) and a South African fur seal (*Arctocephalus pusillus pusillus*) for sub and suprasecond time intervals

How harbor seals encode goals relative to landmarks

Well-developed spatial reversal learning abilities in harbor seals (*Phoca vitulina*)

A harbor seal (*Phoca vitulina*) can learn geometrical relations between landmarks

