Abschluss des Vorhabens "Auditory object normalisation"

Initiative: Dynamik und Adaptivität neuronaler Systeme (beendet)

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Mammals have an extraordinary ability to identify auditory objects like communcation calls and speech. Echolocating mammals identify real, three-dimensional objects exclusively through the auditory analysis of echoes. For reliable object recognition, the auditory system must segregate information about object size from information about object structure. This results in a size-invariant object representation; the auditory object is normalized. Within this joint project a comprehensive set of psychophysical, imaging and electrophysiological studies have been carried out. In the final phase the aim is to resolve three urgent challenges: In passive listening, the statistical inference model (developed by Turner, Walters and Patterson) will be used to estimate vocal tract length as a function of age and height. This will help to explain why human speech recognition is so much more robust than machine recognition. In terms of bats' echo-acoustic object recognition the sensitivity of the bat P. discolor to the spatial extent of reflective surfaces will be studied psychophysically. Electrophysiologically, the effect of an object's spatial extent on the cortical representation of object size will be tested by presenting echoes of an object in virtual-acoustic space while recording from auditory cortical neurons.

Projektbeteiligte

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Es werden die Institutionen genannt, an denen das Vorhaben durchgeführt wurde, und nicht die aktuelle Adresse.