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An area sensitive to apparent acoustic motion in the auditory cortex of the bat Phyllostomus discolor

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The processing of apparent acoustic motion was investigated in neurons in the auditory cortex of anaesthetized bats (*Phyllostomus discolor*). Apparent motion in the horizontal plane was generated by presenting pairs of pure tones with different interaural intensity differences (IIDs) and temporal separations, i.e. inter-pulse intervals (IPIs). Thus the spatial extent, motion direction and velocity of motion changed for each stimulus pair. A complete stimulus matrix consisted of 81 IID-combinations in the range between -40 to +40 dB IID and was randomly presented via earphones with ten repetitions for up to five different IPIs (6.25 to 150 ms). Thirty percent (71) of the 236 extracellularly recorded cortical single cells or small neuronal clusters showed facilitatory responses to acoustic motion compared to static stimulation and were classified as motion sensitive. With decreasing IPI, all motion sensitive neurons changed their azimuthal receptive field in size or spatial position. Twenty two percent (15) of them preferred small movements in the frontal area at very short IPIs. Most interestingly, the motion sensitive neurons were almost exclusively (97 %) found in the dorsal area of the caudal part of the auditory cortex indicating that this cortical area is specifically involved in the processing of acoustic motion.