Comments

Comment by Wang:

The data in your Fig. 2 show a decrease of response magnitude as inter-click rate increases. Our recent study (Lu, Liang and Wang 2001) showed that discharges of neurons in the auditory cortex of awake primates were synchronized to individual clicks when inter-click rates were low, but became increasingly non-synchronized as the inter-click rate increases. Because MEG signals are averaged over many repetitions, cortical activities that are not synchronized to stimuli would be washed out in the MEG signals, resulting the reduction in MEG response magnitude. Our neuronal data indicate that the auditory cortex is responsive to click stimuli at both low and high inter-click rates.

Lu T, Liang L, and Wang X. (2001) Temporal and rate representations of time-varying signals in the auditory cortex of awake primates. Nat Neurosci. 4, 1131-1138.

Reply:

A decrease in the number of neurons showing synchronized activity at short ICIs is certainly a main reason for the relatively small amplitude of the *fast* activity at a click repetition rate of 60 Hz. Since the most important source of MEG are not action potentials as considered by Lu *et al*. (2001), but postsynaptic potentials, non-synchronized activity possibly contributes to the *slow* activity, which grows with increasing click rate.

Comment by McAdams:

You refer in your paper to pitch "onset" and "offset" responses to the region where the steady periodicity exists in your click train. In your Fig. 3, one sees a response to the beginning of this stabilized region in the 60-Hz cycle which has a latency of approximately 100 ms. You call this the pitch "onset" response and that seems reasonable. However, the response labeled pitch "offset" seems more problematic. In order for it to be a causal "response" one would expect it to occur *after* the end of the periodic region. However, it seems to anticipate the end by from 100 to 200 ms depending on the listener. I wonder whether it is reasonable to consider this a true response to the offset, rather than some other perhaps anticipated feature of the stimulus sequence.

Reply:

As indicated in the last paragraph of our discussion, the peak immediately after the periodic phase of the stimulation cycle (Fig. 3) has to be interpreted with care. While the activity decrease *after* the maximum appears to be associated with pitch offset, the nature of the activity increase *before* the maximum is not clear. Possibly

a sustained field builds up during the periodic phase and fades away when the click repetition rate decreases. Figure 2, obtained without high-pass filtering of the data, supports this view (see especially the curves for 30 and 40 Hz).