



Figure 1. Experimental design and measurements. A. Experimental setting. Awake behaving mice were allowed to run on a ball. Sounds were presented randomly interleaved with laser trials. Pupil size was measured on the contra-lateral side from neural recording site (recordings in left auditory cortex and right pupil). B. Stimulus presentation. Laser pulses were presented with and without 80 dB WN bursts, the conditions were randomly interleaved, with a one second ISI. When presented, the laser pulse began 50 ms before the start of the sound and ended 150 ms after sound offset. C. Example traces of neuronal FR (25 ms time bins with Gaussian convolution smoothing with sigma = 50 ms), pupil size, and running speed. Animals frequently oscillated between low and high arousal states.