A

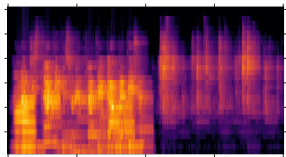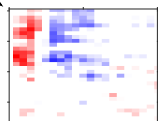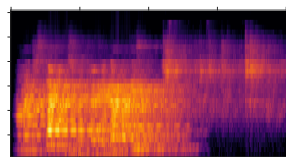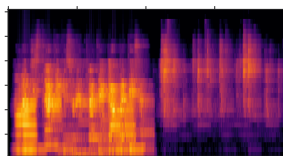**1** Fit single static STRF
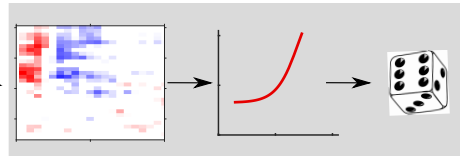
Small room cochleagram

Large room cochleagram

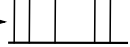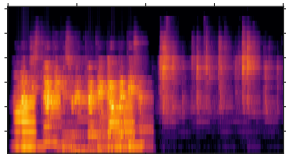**2** Simulate static LNP neuron

Cochleagram → Linear-Nonlinear-Poisson model → Predicted firing rate

3 Fit separate STRFs
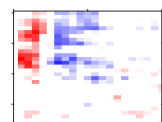
Small room cochleagram

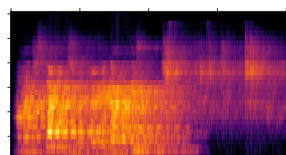Small room predicted firing rate + → Small room STRF
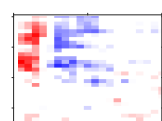
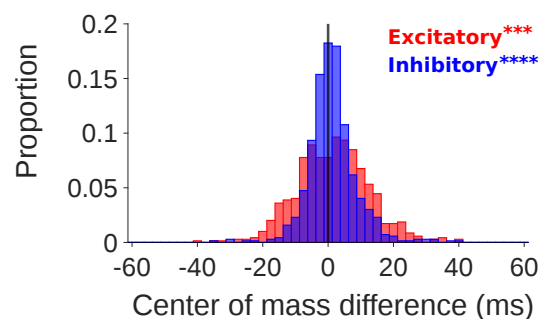Large room cochleagram

Large room predicted firing rate + → Large room STRF

4 Compute metrics

Center of mass & Peak time
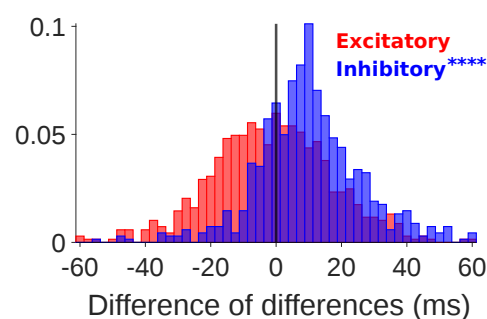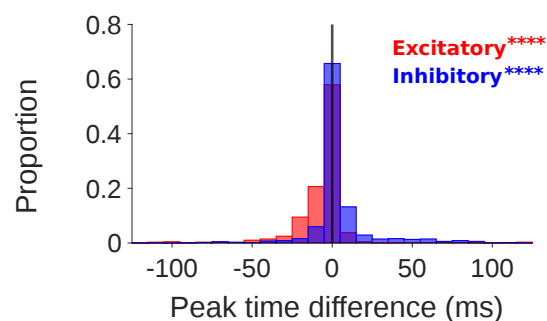
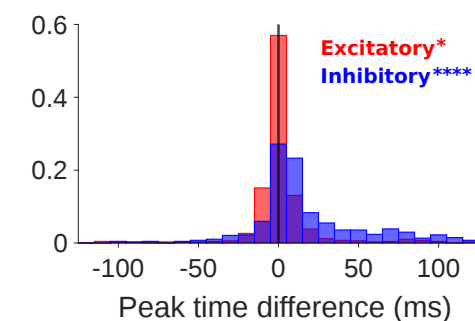**B** Simulated model

Excitatory***
Inhibitory****

Proportion

Center of mass difference (ms)

C Neuronal data

Excitatory
Inhibitory****

Center of mass difference (ms)
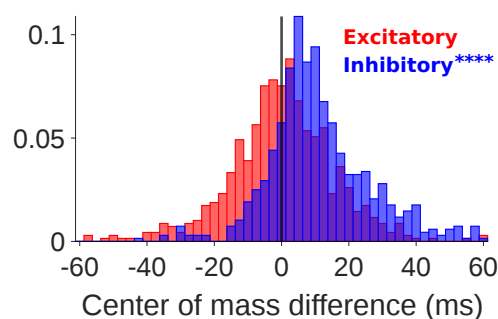
D Neuronal data vs Simulated model

Excitatory
Inhibitory****

Difference of differences (ms)

E

Excitatory****
Inhibitory****

Proportion

Peak time difference (ms)

F

Excitatory*
Inhibitory****

Peak time difference (ms)

G

Excitatory****
Inhibitory****

Difference of differences (ms)