## Figure 1

### 1A – Omega shape

Ploted with fig\_OmegaShape.m.

### 1B – Eta shape (learning rate function)

Plotted with fig\_EtaShape.m.

DIVERGENCE: this figure is plotted exactly as it is given in the article. However, for later simulations (STDP curve for example) we reduced eta 100x. The reason was that for a too high eta, all the changes to weight are destroyed by the weight falling back to its stable value too quickly. In 2004 article, eta scale is about (or for accelerated case), in 2002 article, it is around .

Note that there is a mistake in the article. Correct is , but in the article supplementary it incorrectly shows division by instead of multiplication.

## Figure 2

Did not plot explicitly, but is possible to plot:

* For pre-synaptic influence (fraction NMDAR bound) used fg\_history = [fg\_history 0.5\*f(1)]; 0.5 is here because it’s the maximum possible amount of NMDAR bound
* For post-synaptic influence (BPAP voltage) used V\_H\_history = [V\_H\_history V\_H];
* For calcium level, used Ca\_history = [Ca\_history Ca(1)];

Note that for the figures that are in folder ’1B bottom row’, the dashed lines are not the same as in the article (I plotted the lines at Ca=0.35 and Ca=0.55). This is probably because in the article they want to show that it is possible to separate LTD and LTP. Later, they still use the threshold values 0.35 and 0.55.

**There is a bit of a difference in our 3B calcium levels** (for different post-pre firing regimes). For , our Ca is a bit too high; for and , our Ca is a bit too low. But qualitatively is OK: LTP and LTD thresholds are reached for corresponding spike timings.

## Figure 3

### 3A

Have not plotted. Should not be hard to code.

### 3B – Mean final weight vs input frequency

Did not plot with newest set of parameters (eta changed).

### 3C – Mean final weight vs post-pre timing (STDP curve)

Simulation code in folder ’fig3c’; plotted with fig\_STDP\_curve.m.

Ran the simulations on cluster (did not complete parallelisation batch script because didn’t need in the end – but is very close to finishing).

DIVERGENCE: Used 2002 eta shape, but scaled it down by 100x.

## Figures 4 and 5

Very easy to check: they are the same plots as in previous figures, but with different parameters.