

w_{ij}

$$S_i(t+\Delta t) = \text{sigmo}(h_i(t))$$

$$= \text{sigmo}\left(\underbrace{\sum_{j \neq i} w_{ij} S_j(t)}_{h_i(t)}\right)$$

$$S_i(t) = \sum_i^N$$

↓

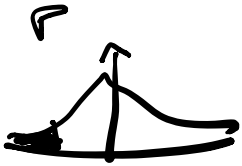
$$h_i^v = \sum_{j \neq i}^N \sum_{\mu=1}^p \frac{1}{2} \sum_i^M \sum_j^M \sum_i^N$$

$$= -\frac{1}{2} \sum_{\mu=1}^p \sum_i^M \sum_{j \neq i}^N \sum_i^M \sum_j^N$$

$$= -\frac{1}{2} \sum_i^N \left(\sum_{j \neq i}^N \sum_i^M \sum_j^N + \frac{1}{2} \sum_{\mu \neq \nu}^p \sum_i^M \sum_{j=1}^N \sum_i^M \sum_j^N \right)$$

$$= \sum_i^N \frac{1}{2} (N-1) + \frac{1}{2} \sum_{\mu \neq \nu}^p \sum_i^M \sum_{j=1}^N \sum_i^M \sum_j^N$$

$$= \sum_i^N + \text{constant}$$



$$\langle \sum_i^M \sum_j^N \rangle = \frac{1}{2} \sum_{j=1}^N \sum_j^M \sum_j^N$$

→ premedit
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 $M > N$

$$= a$$

So define $w_{ij} = \frac{1}{2} \sum_{\mu=1}^p (\sum_i^M - a)(\sum_j^M - a)$