

Neural coding depends on spatial and temporal frequency in direction selective cells in V1 and MT/V5

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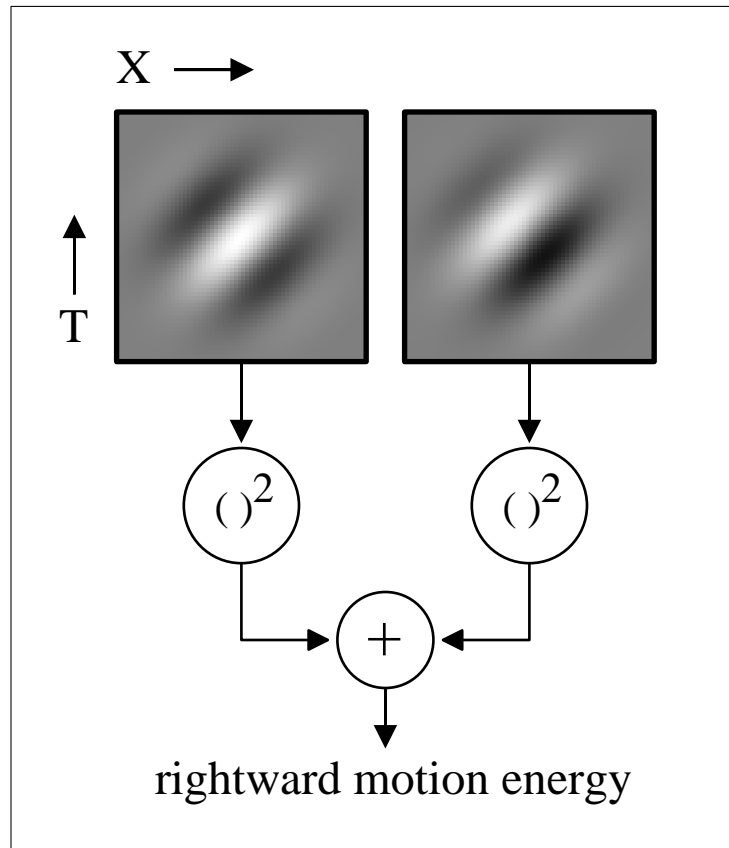
James R. Cavanaugh

J. Anthony Movshon

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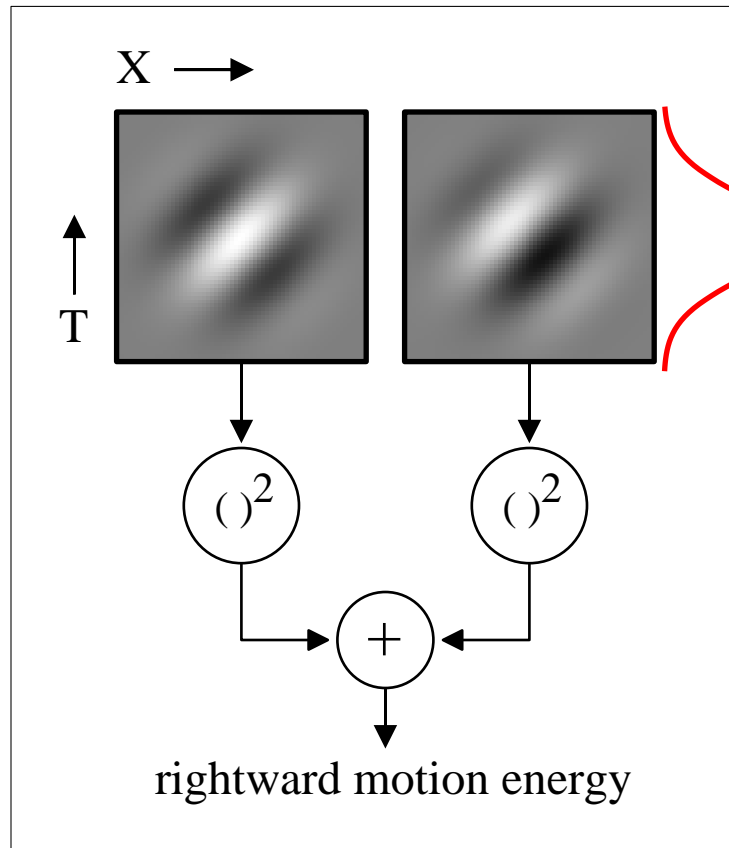
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Parks Road, Oxford, OX1 3PT, United Kingdom*

One simple model for direction selectivity



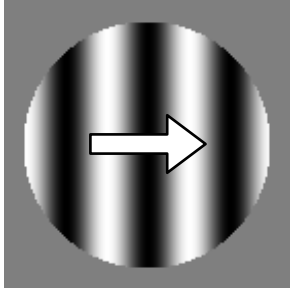
Adelson and Bergen (1985)

One simple model for direction selectivity

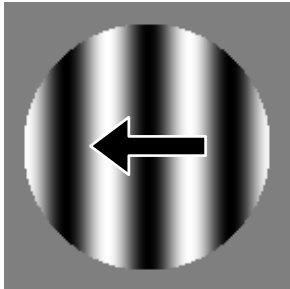
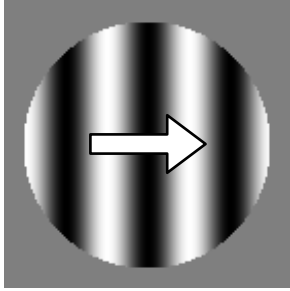


Adelson and Bergen (1985)

Preferred (P)

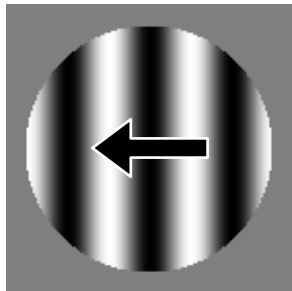
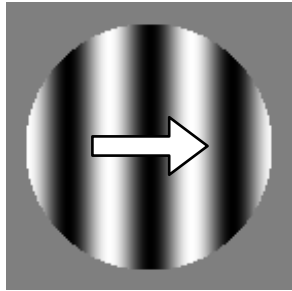


Preferred (P)



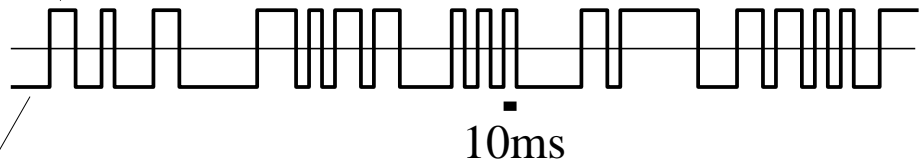
Antipreferred (A)

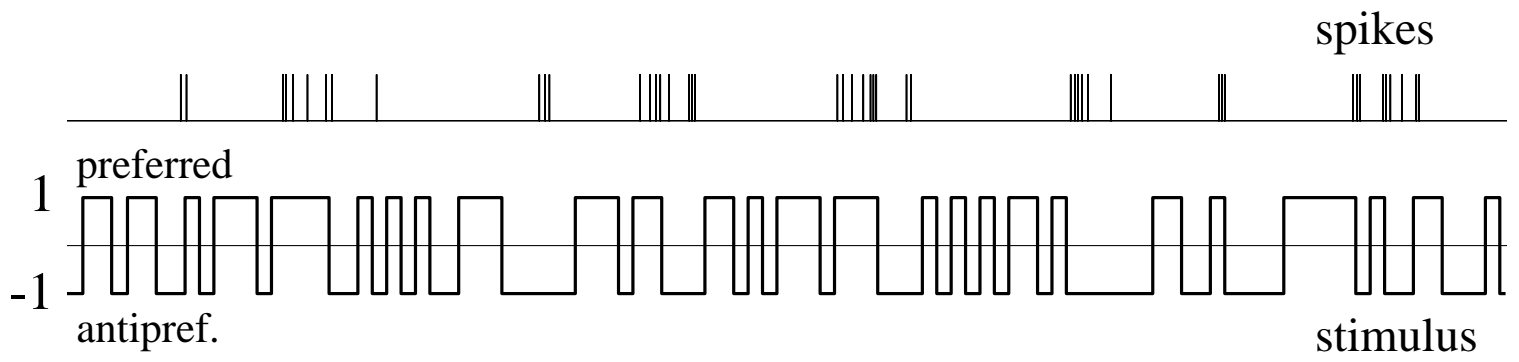
Preferred (P)

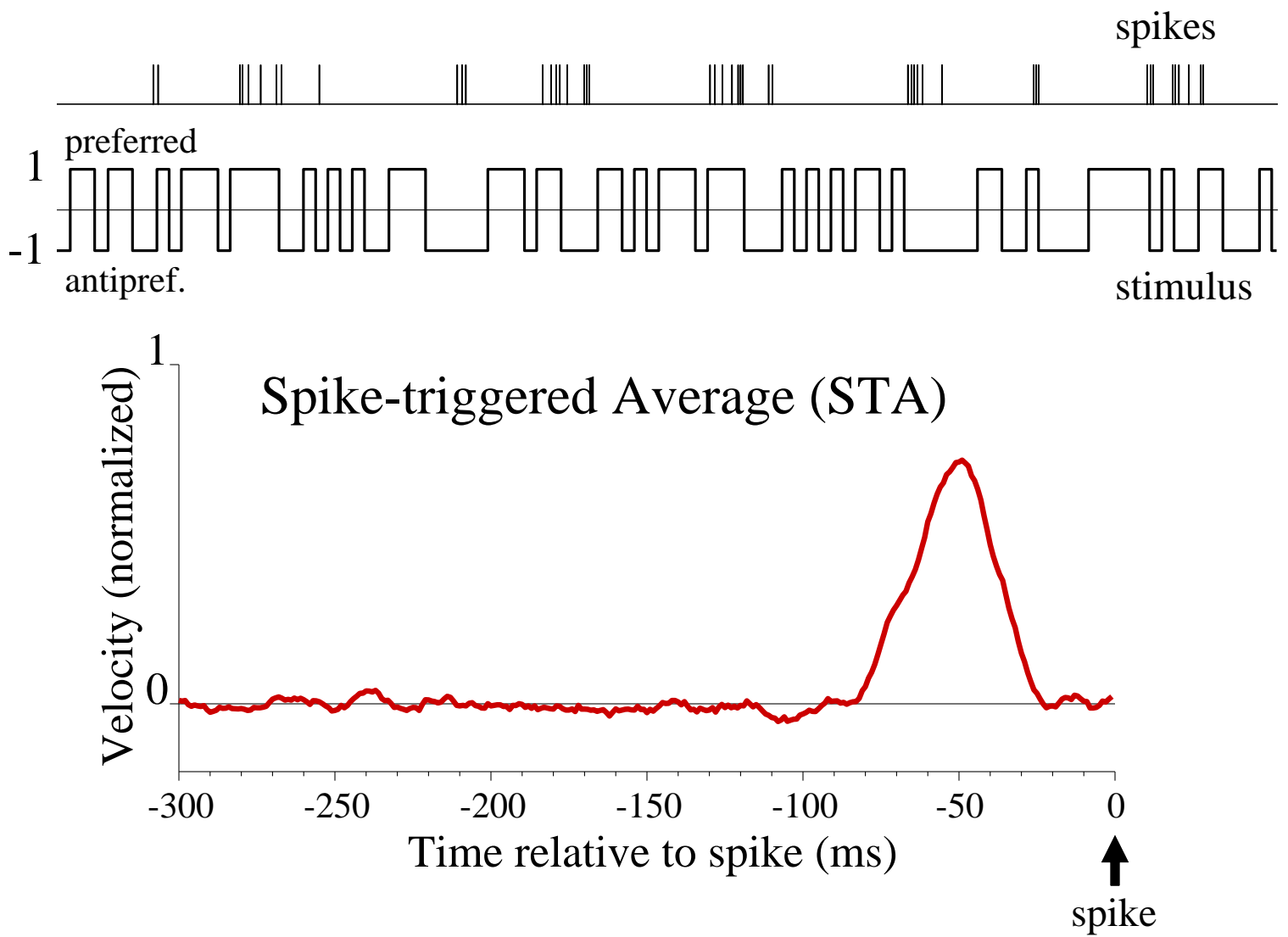


Antipreferred (A)

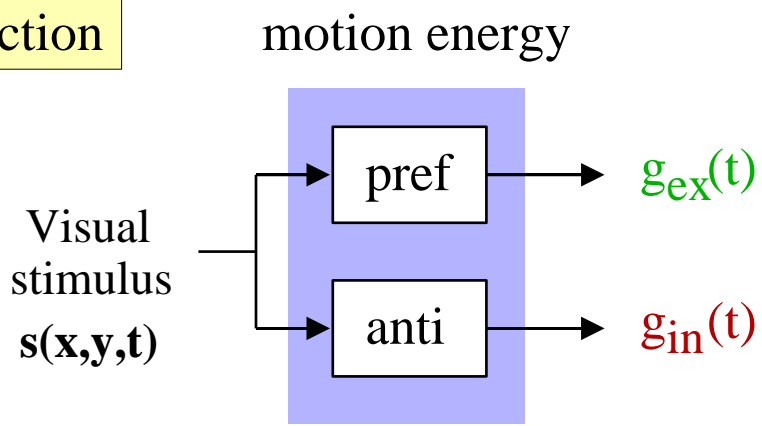
binary, random sequence



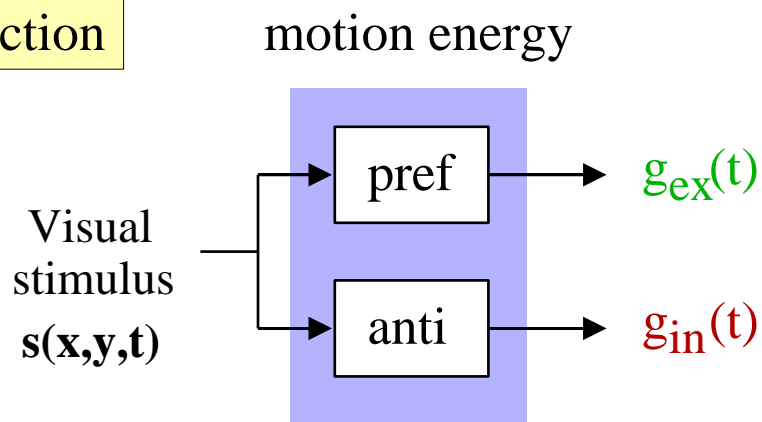




Motion detection

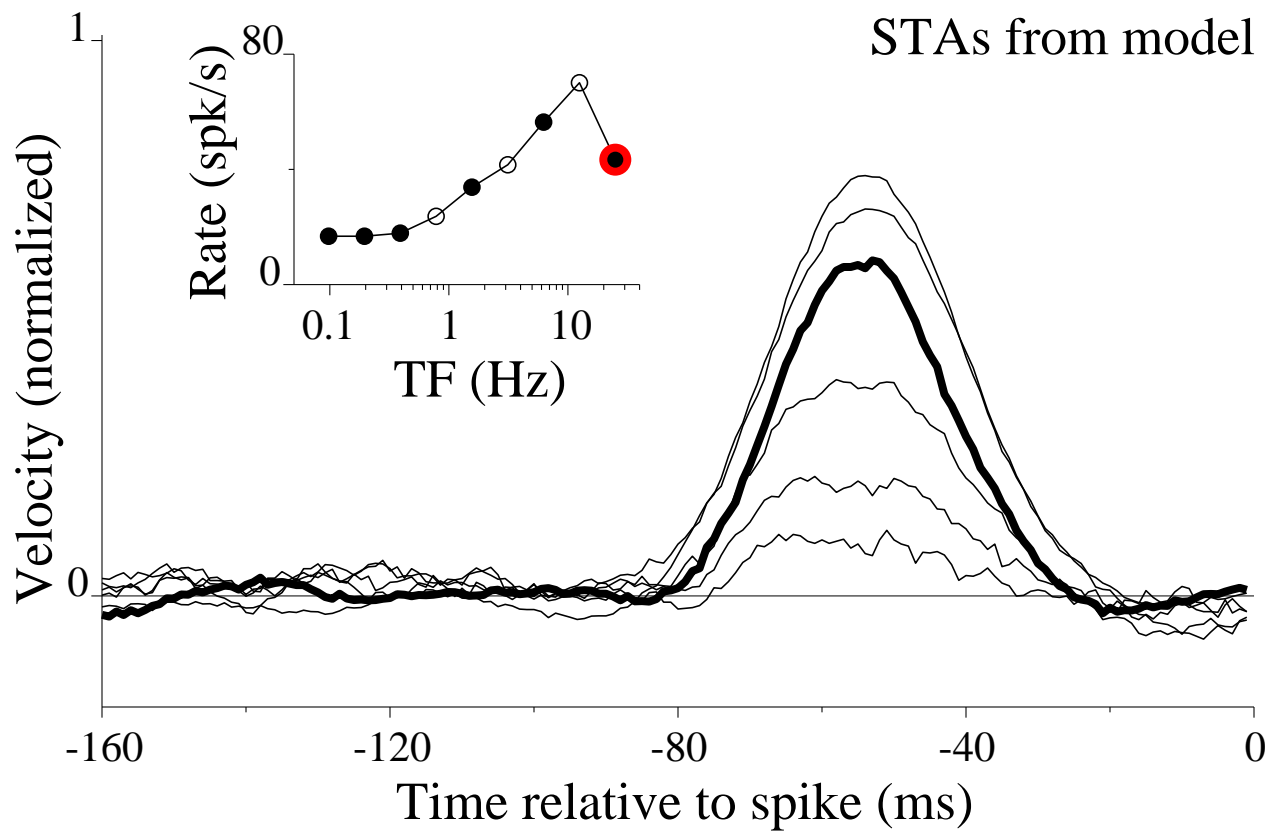


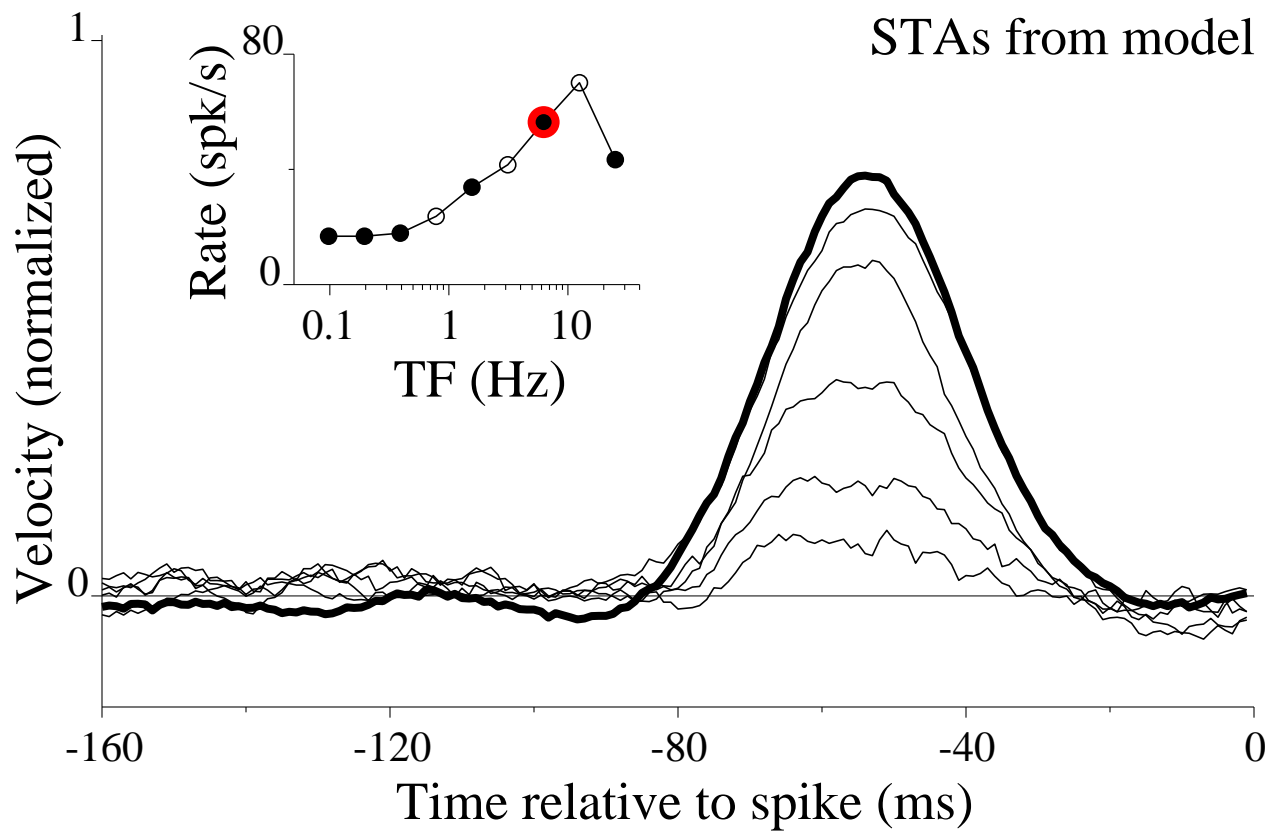
Motion detection

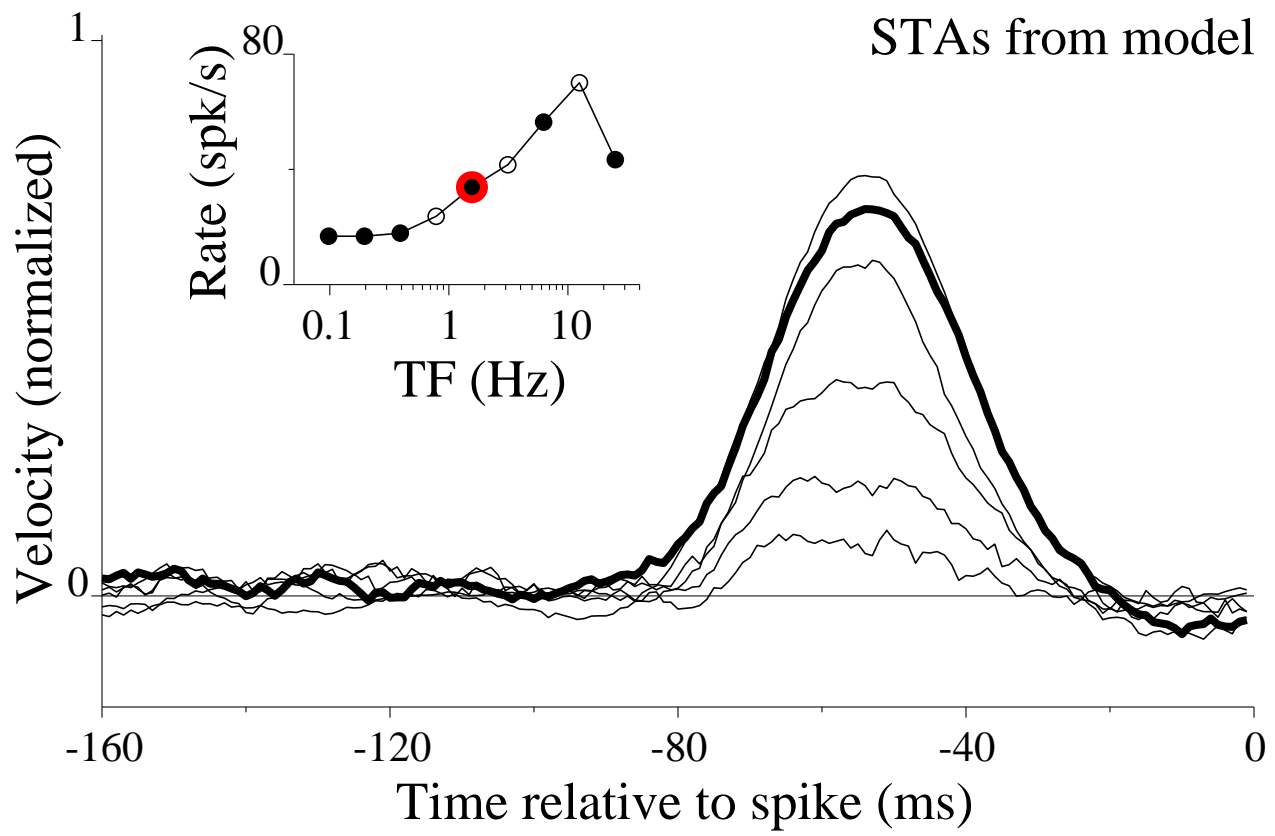


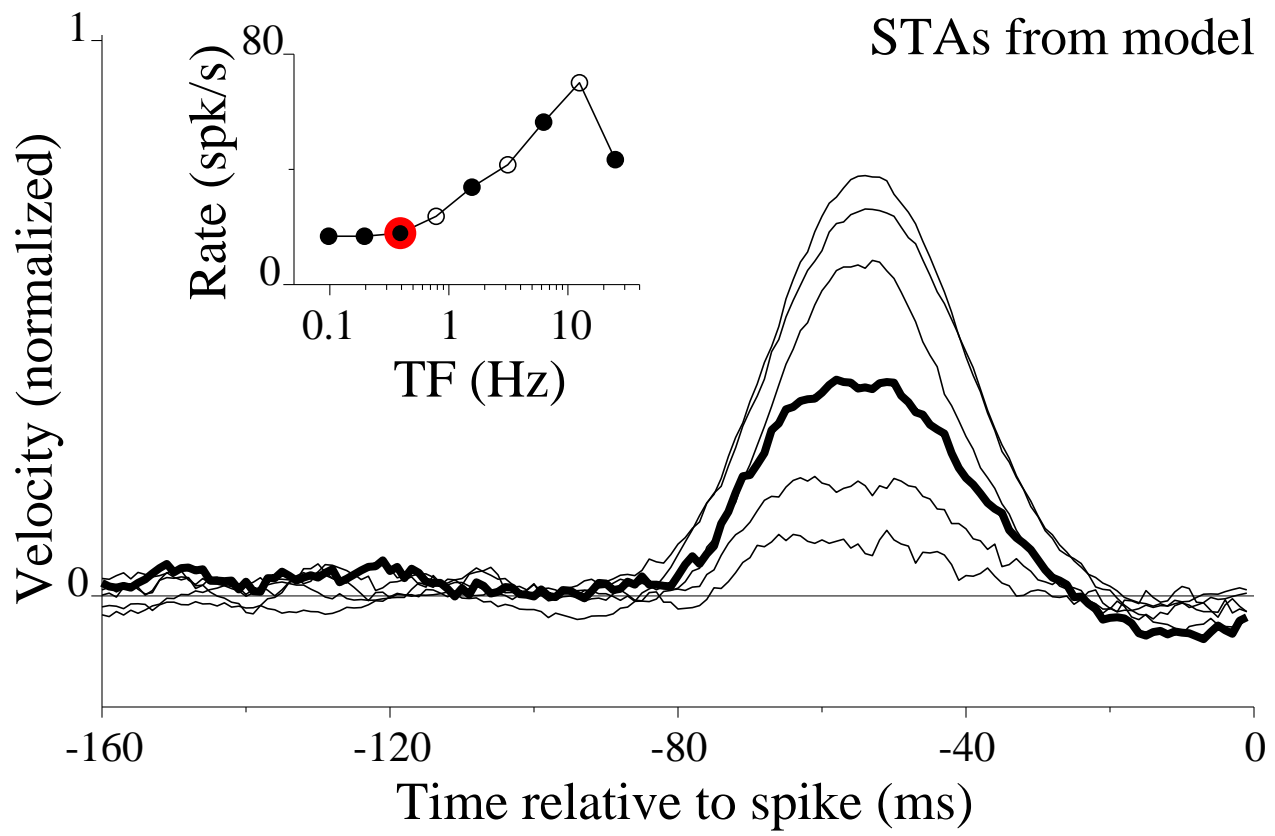
Spiking: integrate-and-fire

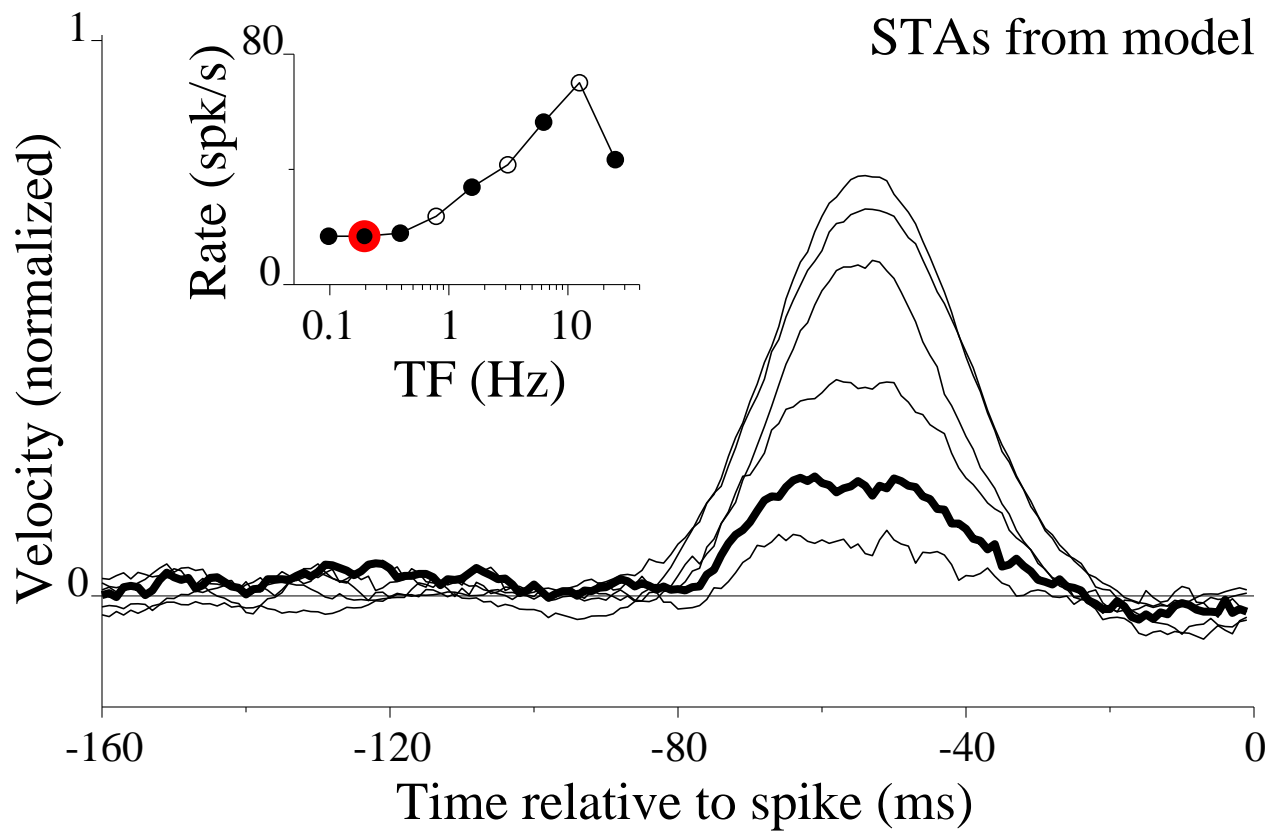
$$C \frac{dV}{dt} = g_{ex} (V_{ex} - V) + g_{in} (V_{in} - V) + g_{leak} (V_{rest} - V)$$

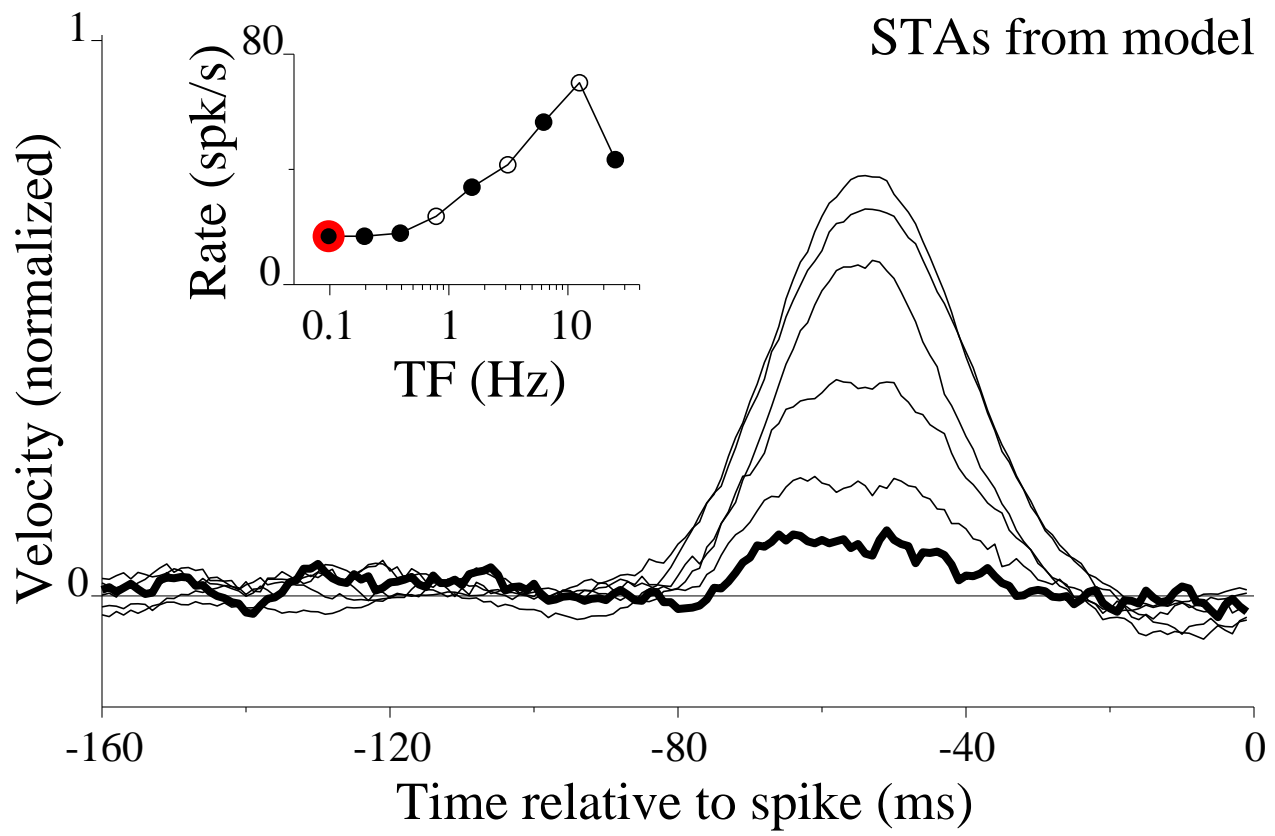


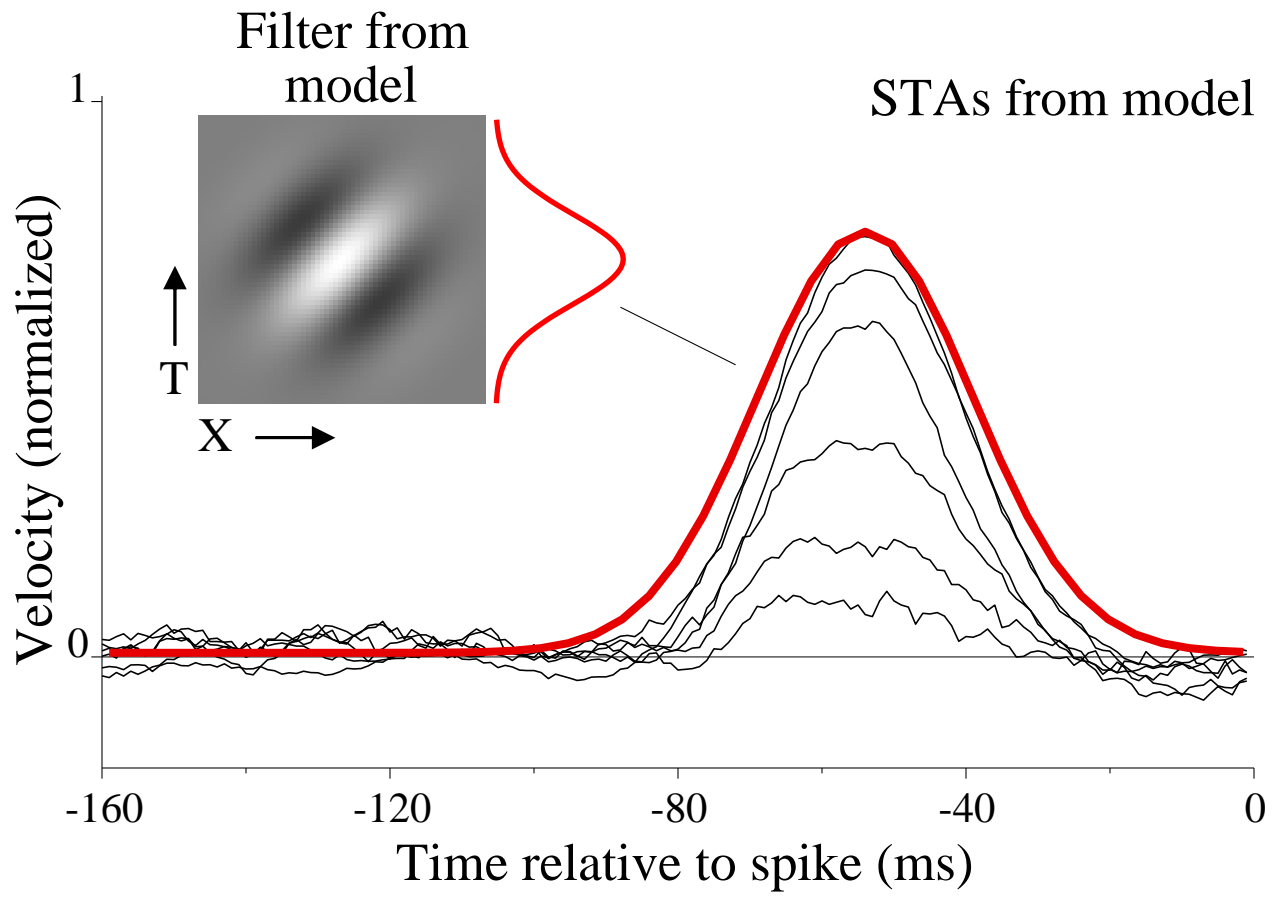




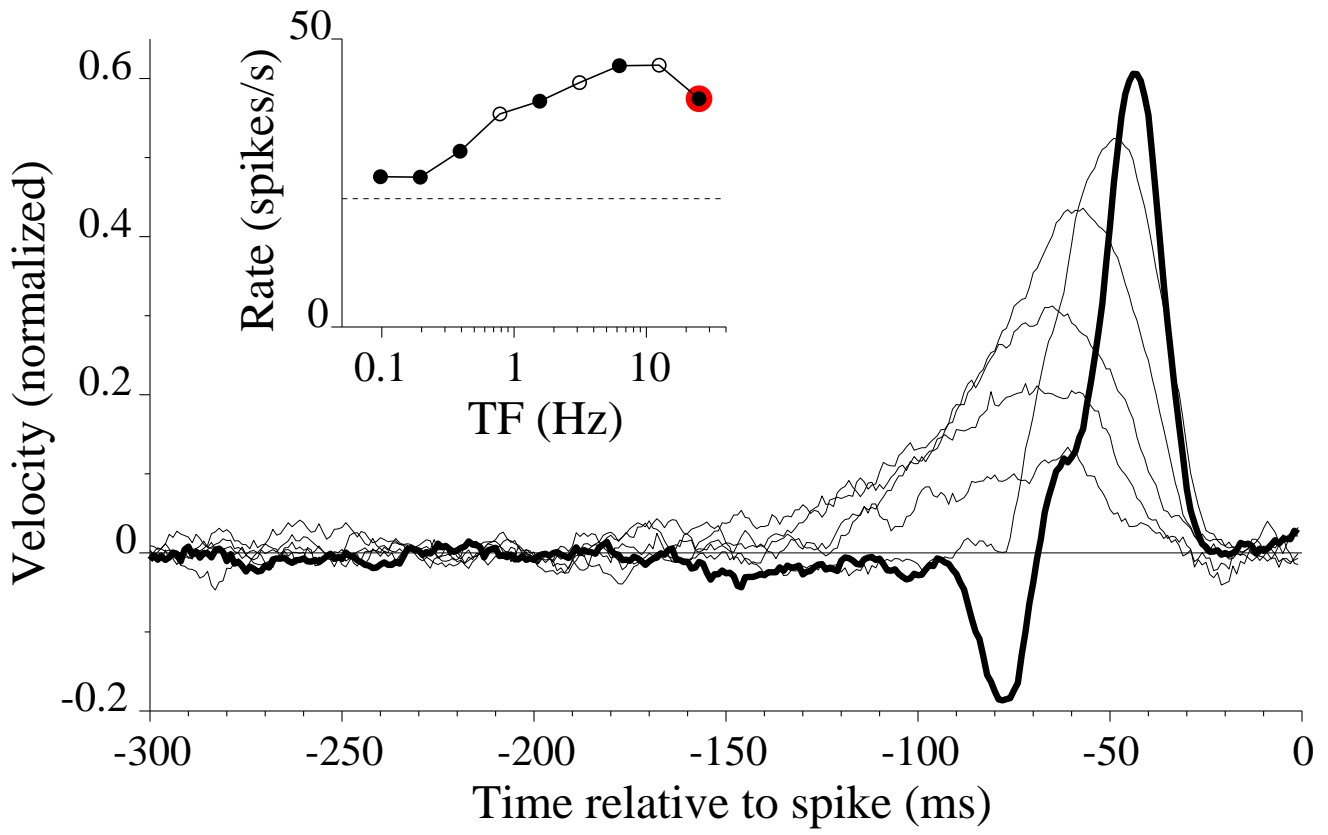




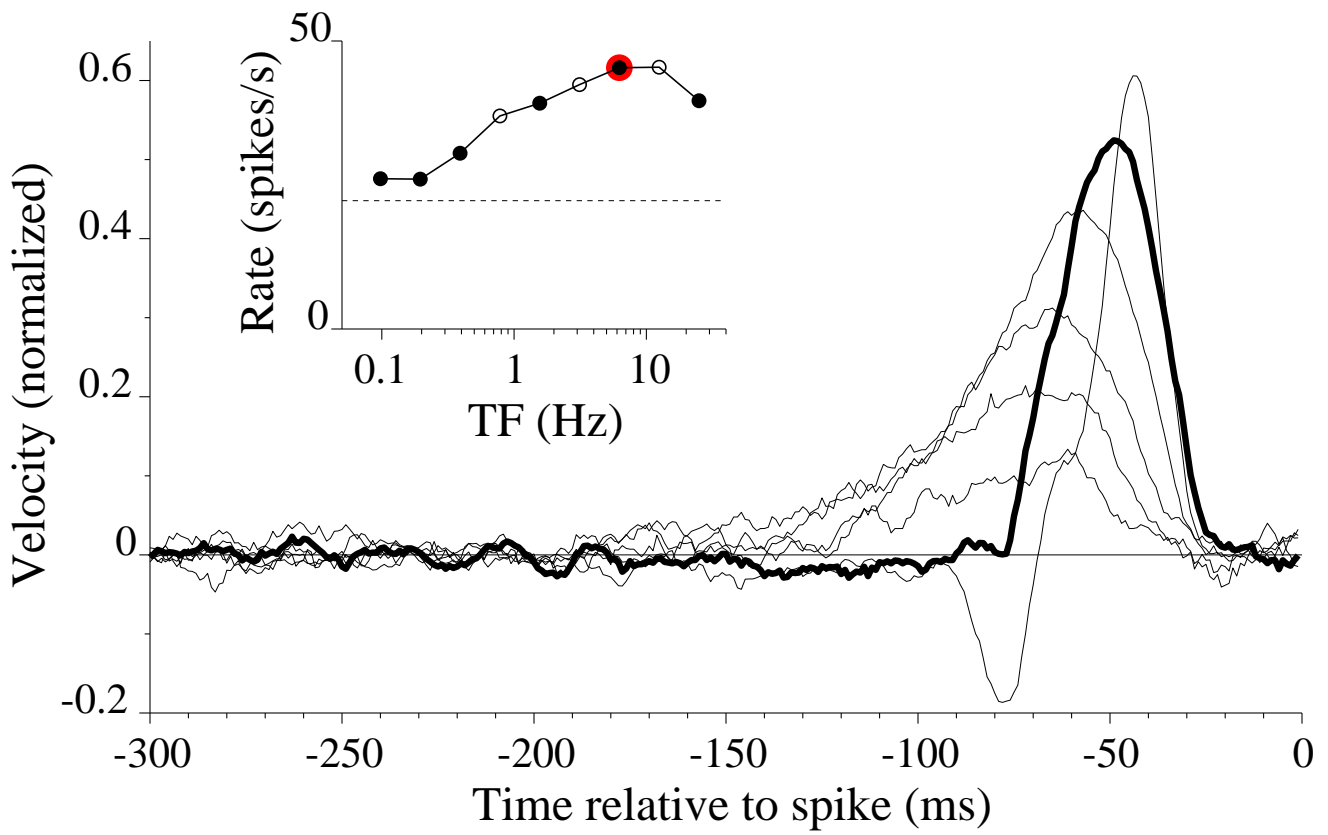




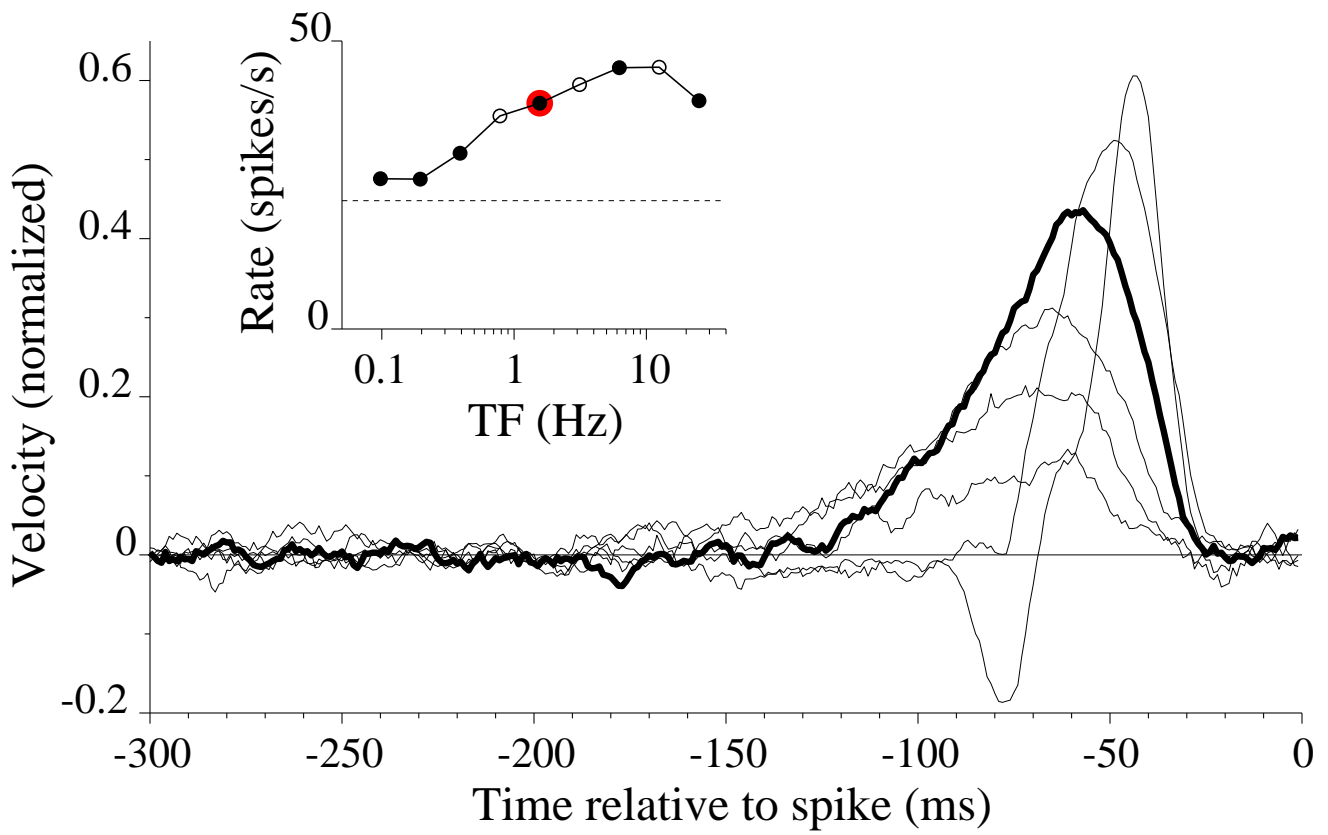
V1 complex DS cell



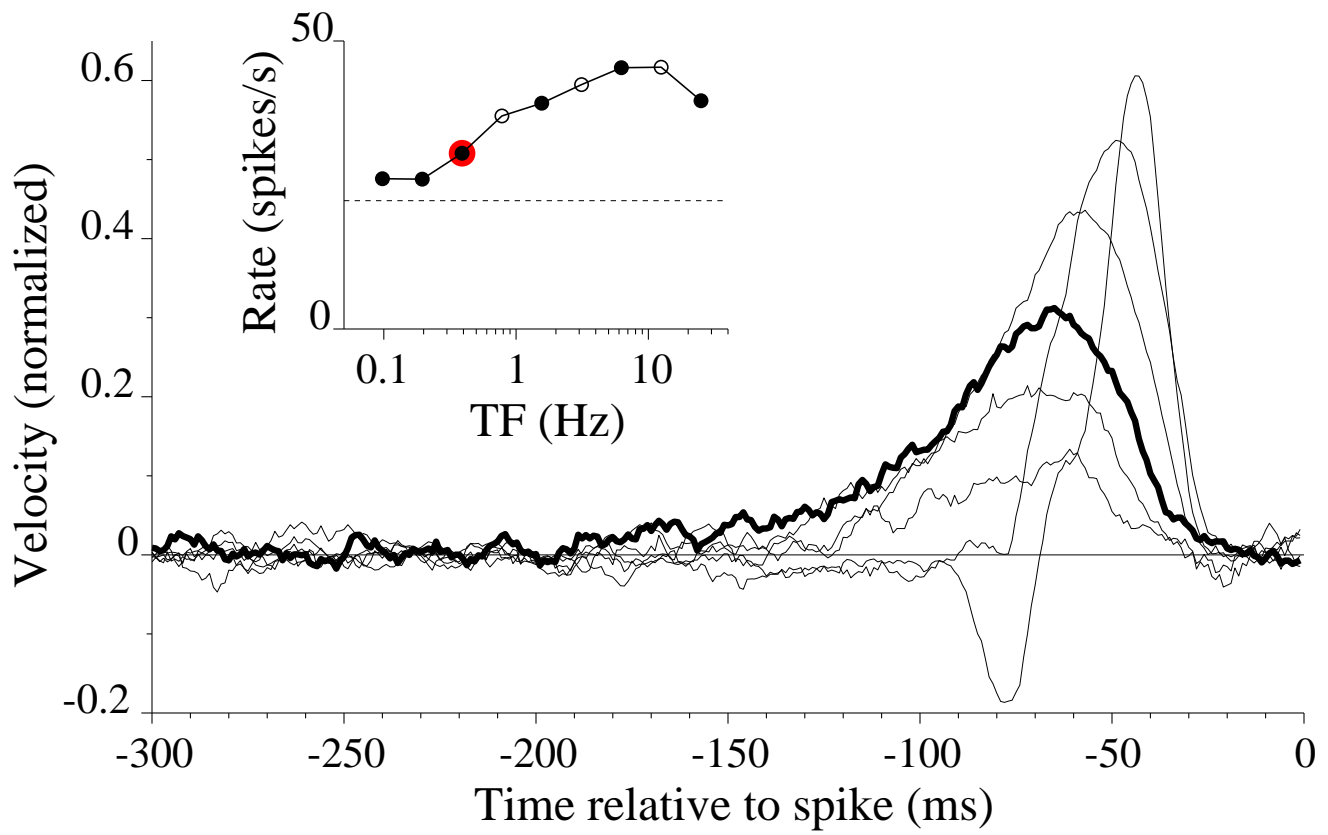
V1 complex DS cell



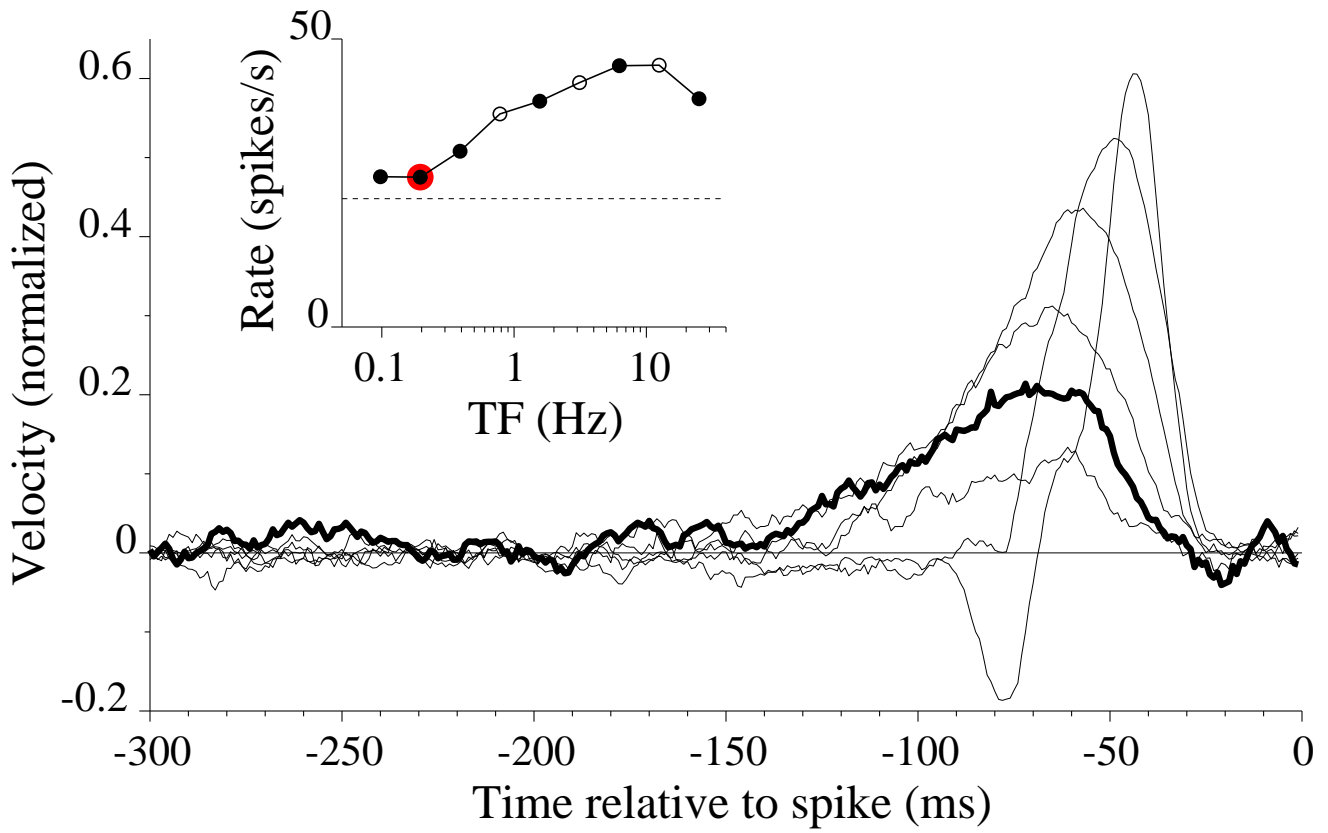
V1 complex DS cell



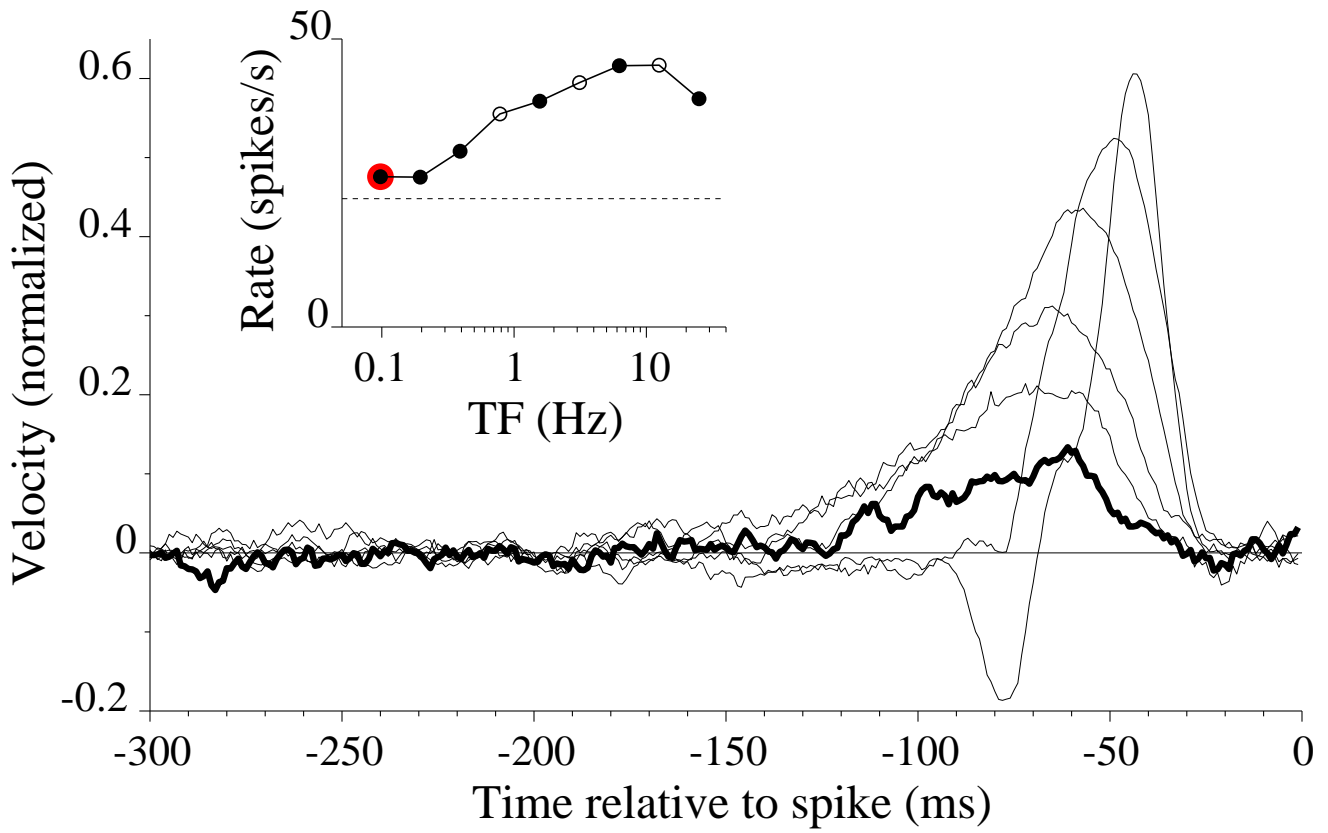
V1 complex DS cell



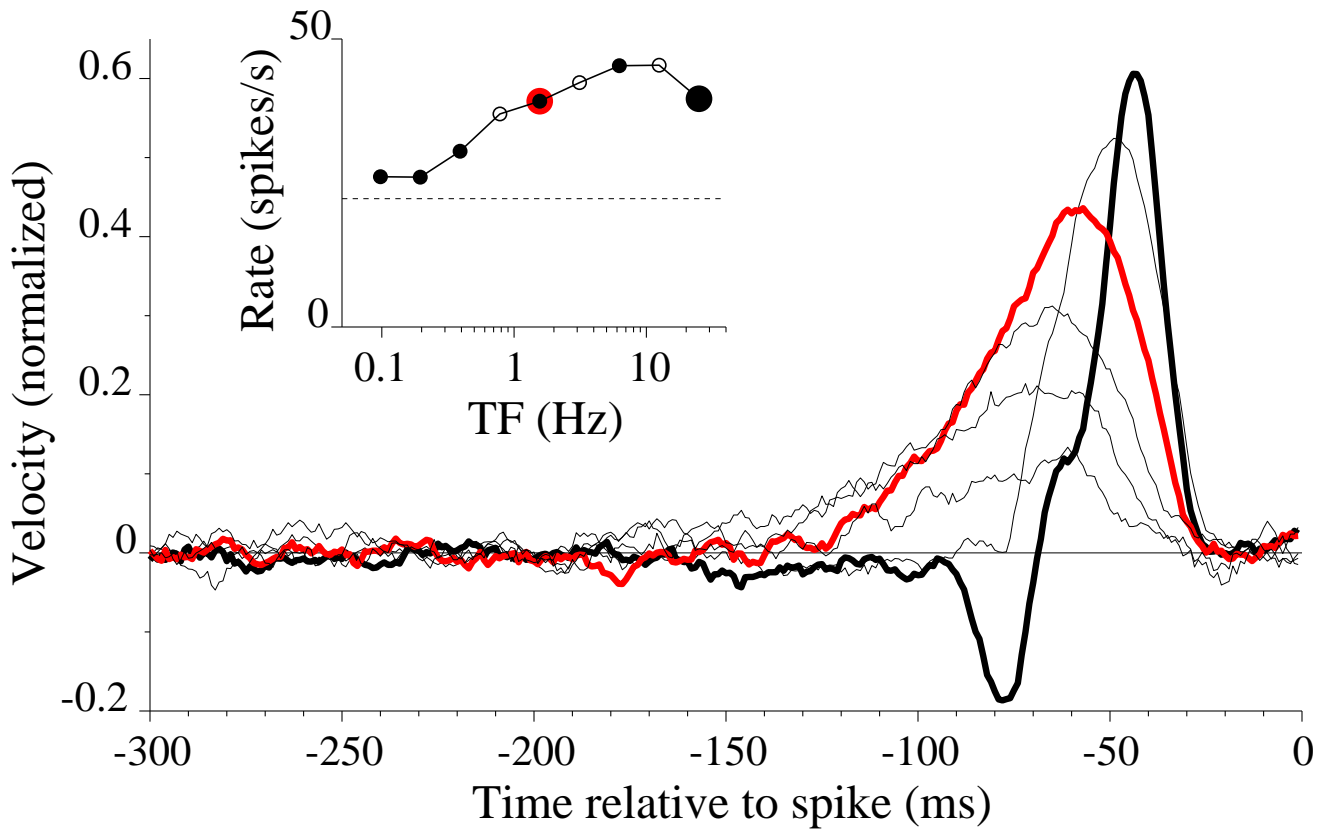
V1 complex DS cell



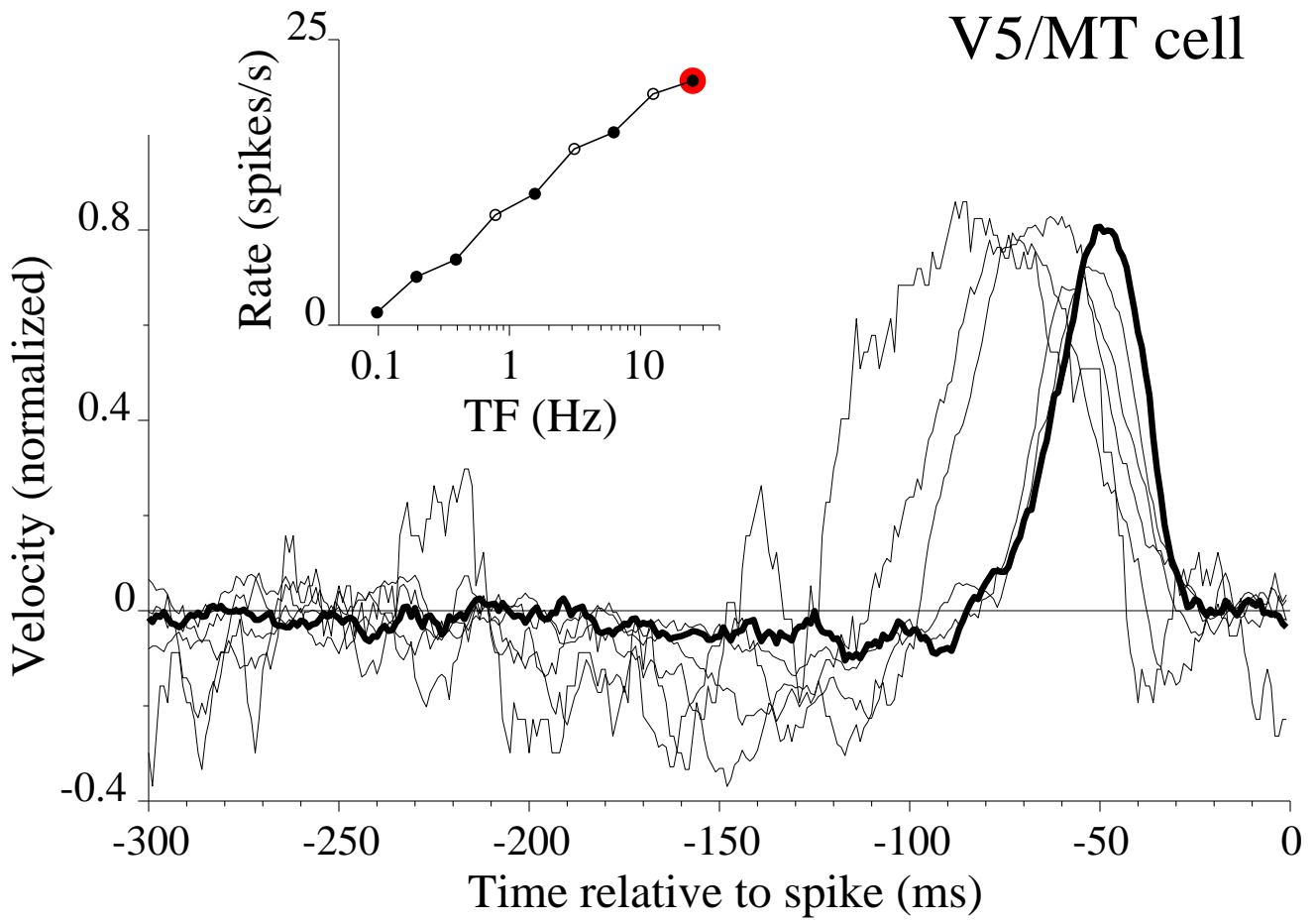
V1 complex DS cell



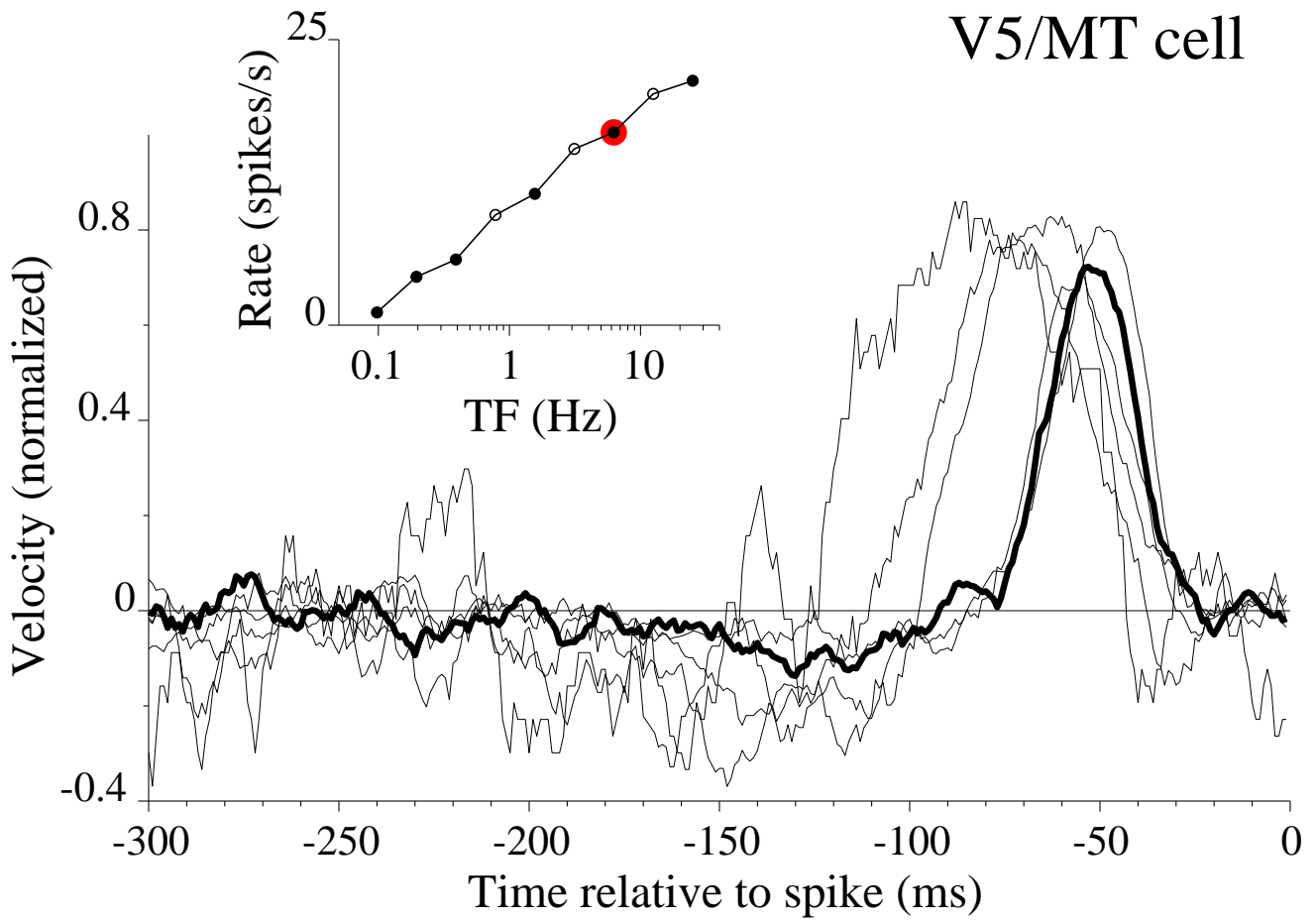
V1 complex DS cell



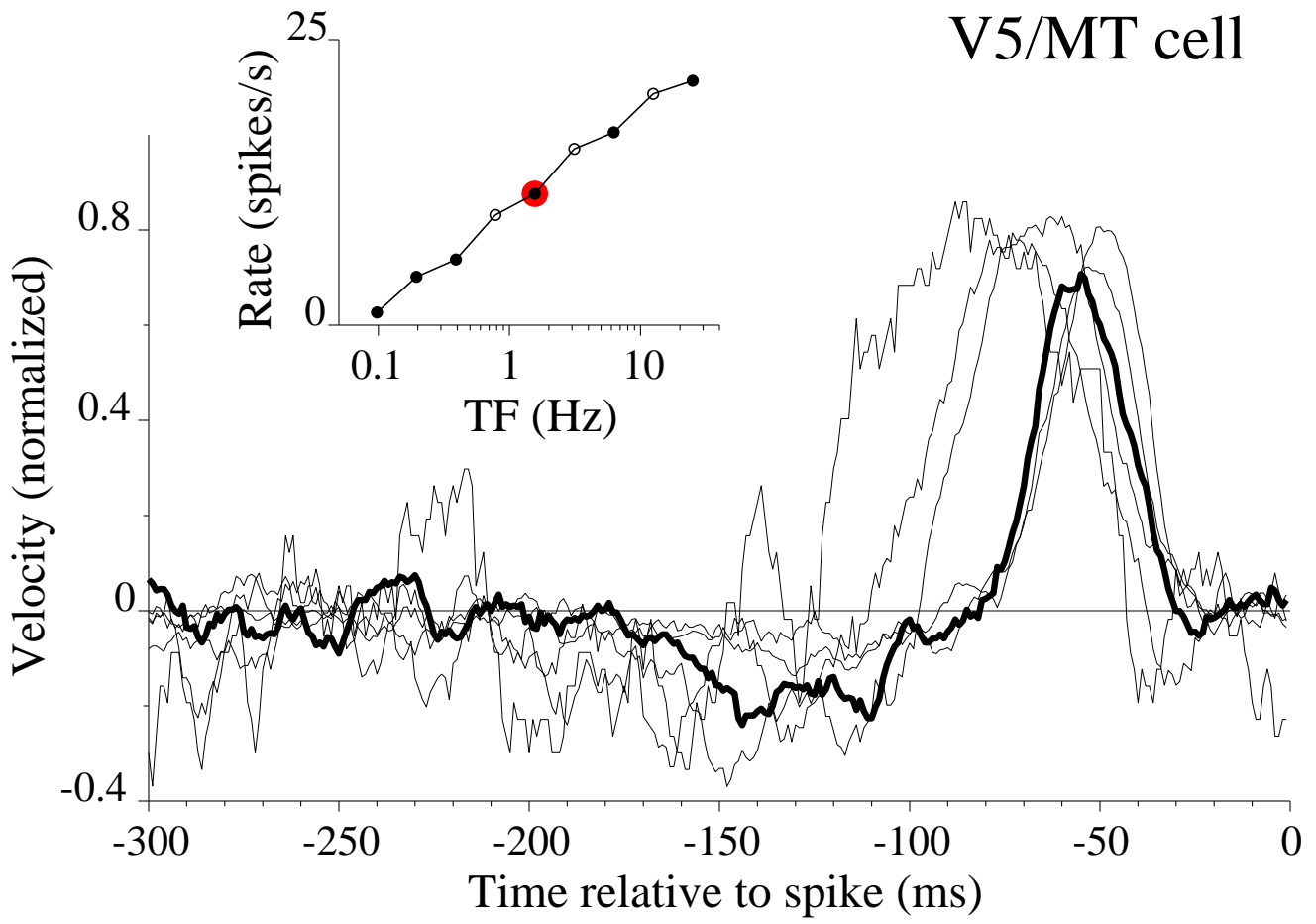
V5/MT cell



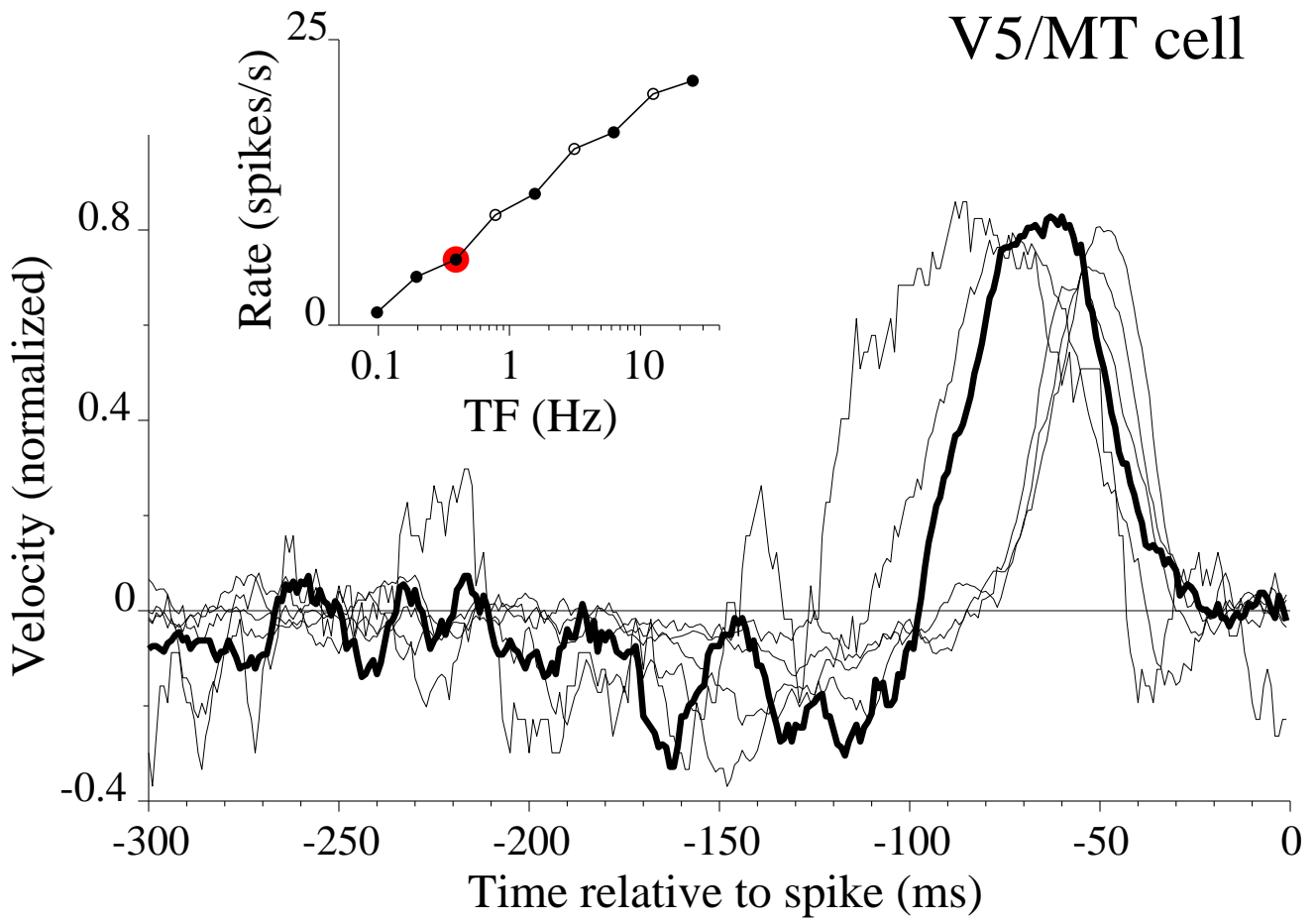
V5/MT cell



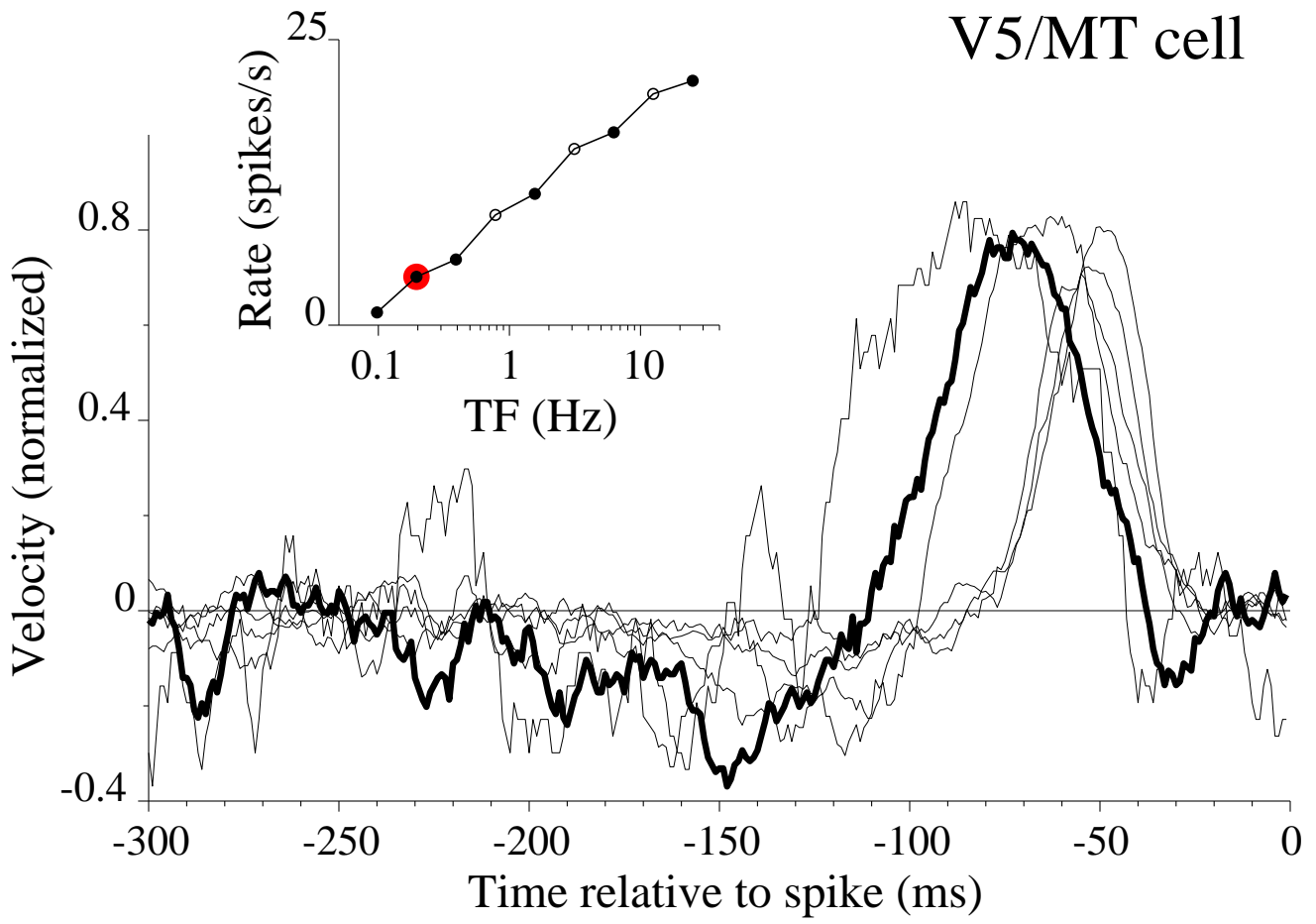
V5/MT cell



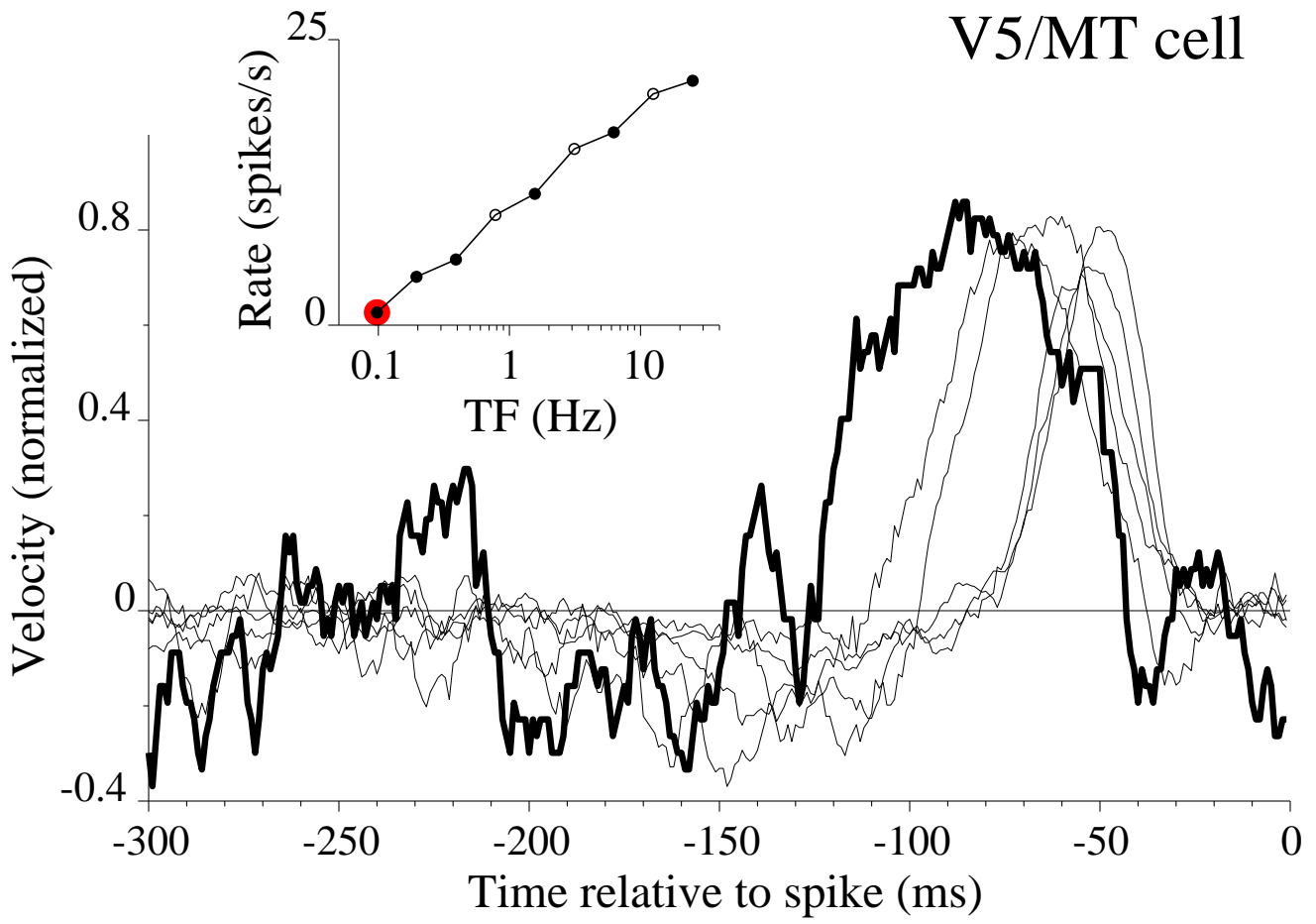
V5/MT cell



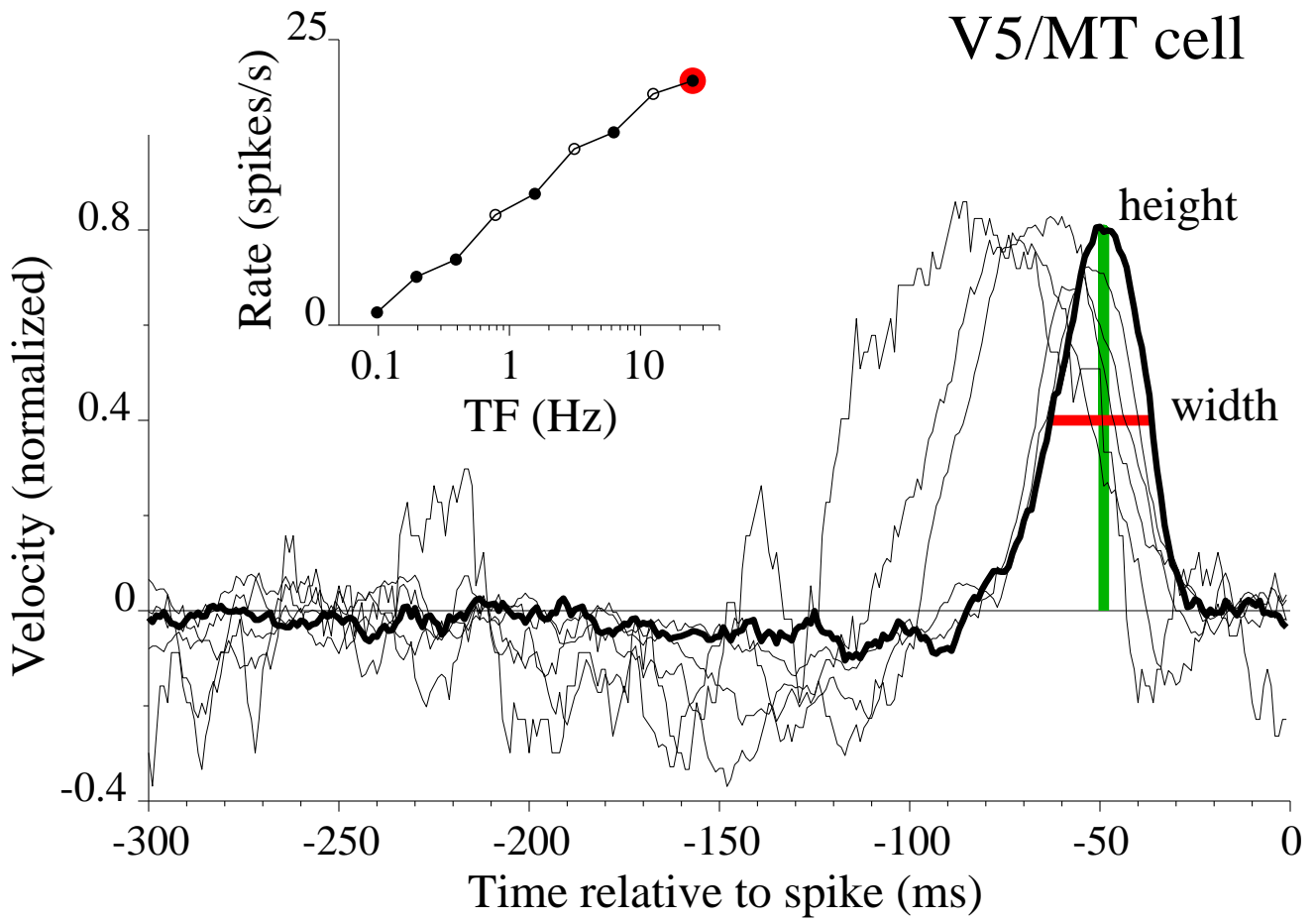
V5/MT cell

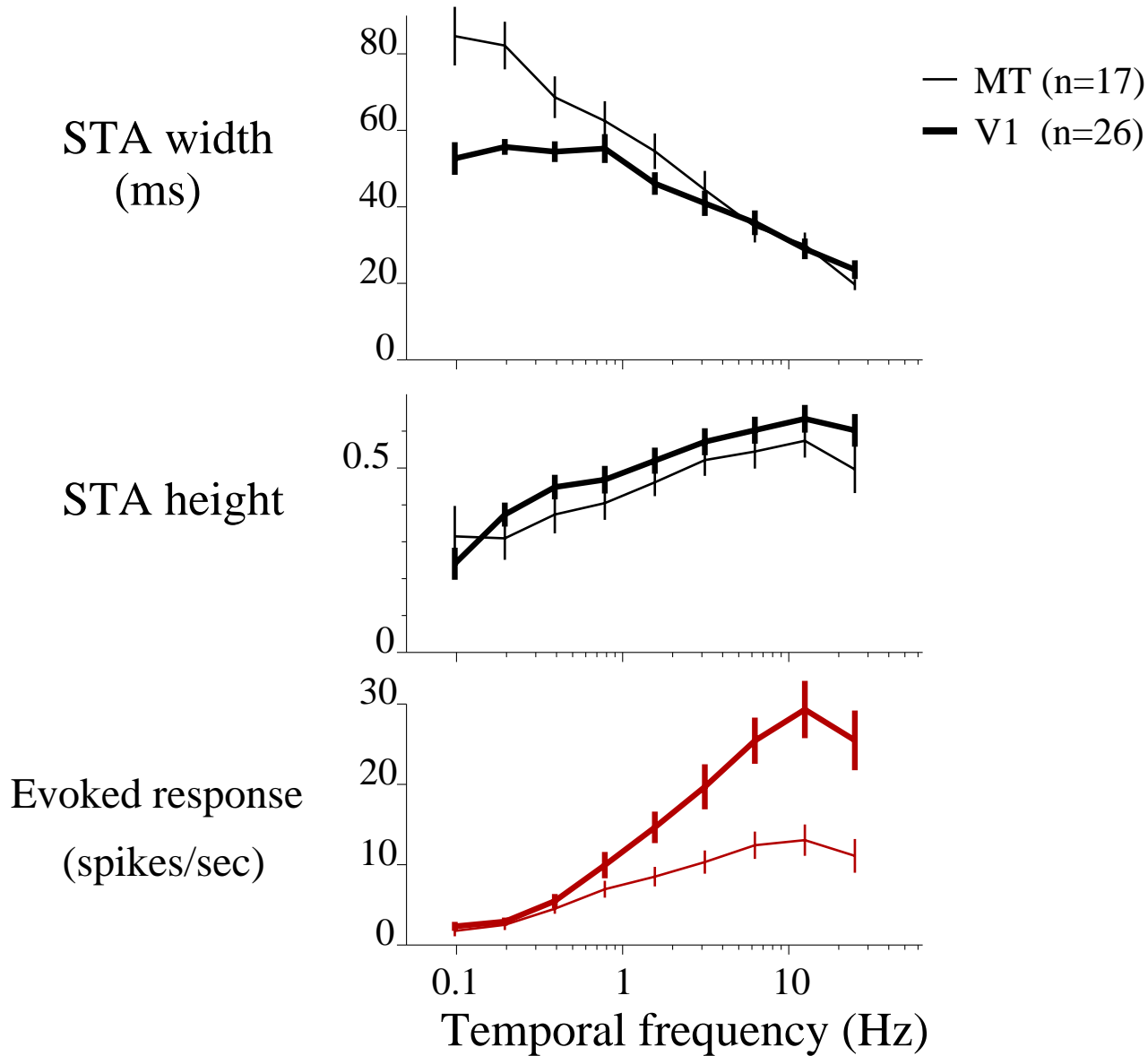


V5/MT cell



V5/MT cell





V1 complex DS

