# 1   Results

talk about time series - what features characterize each model? -Compare models by comparing features
of their time series: Burst Duration, Interburst Interval, etc. From these generally trend are clear:
as Simple visual comparison of a section of membrane potential time series reveals the general trends
created Yan model characterized by longer burst duration and more spiking along the leading edge of
each burst. Comparing time series Figures **??** and **??**, we see that at the low end of the tested g_{NaP}
range (1.8 nS)...and at the end of the range, when $g_{NaP} = 4.2$ nS, we see ...
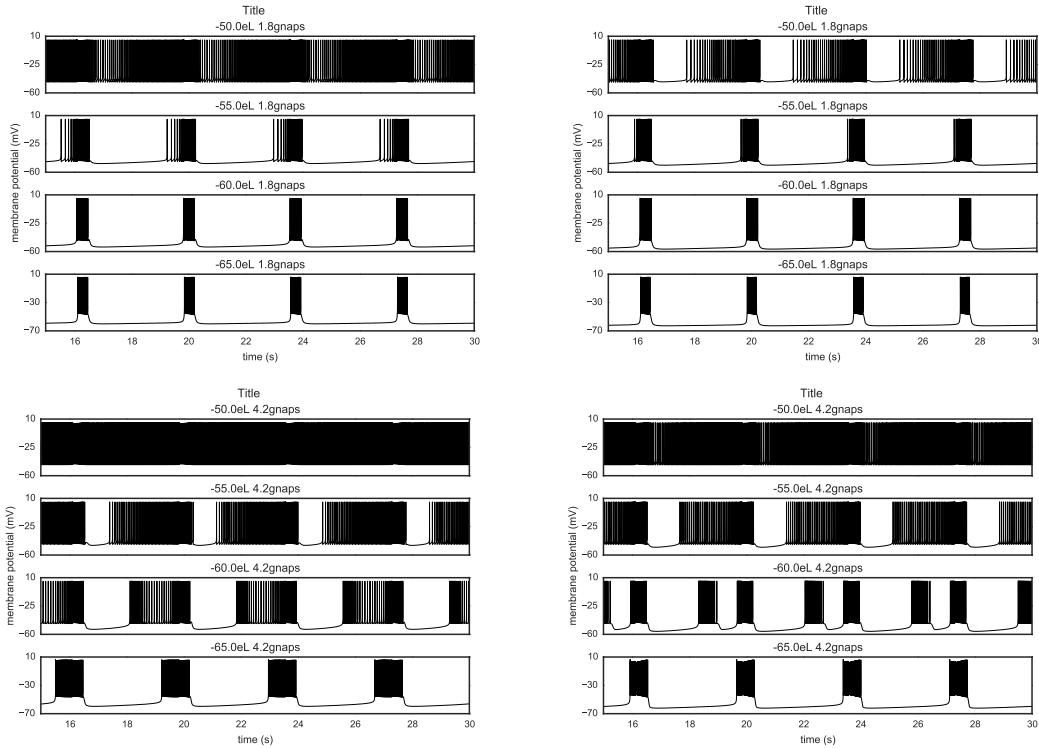
1.1   Total Cycle Time, Burst Duration, Interburst Interval

-Interesting to note that while most of the measures vary considerably depending on the model and
parameters used to generate the time series, Total Cycle exhibits little-to-no change reffig:hm txt. The
single exception, caused by bi-modal bursting behavior **??**, occurs in the TB model when eL=-60.0 mV
and g_{NaP}=4.2 nS.

Average total cycle time, the time from the start of one burst to the start of another, was very
uniform between models for all parameter sets that exhibited bursting (Fig [**??**]). The only point of
significant difference was at $eL = -60 g_{nap} = 4.2$ where the value for the TB model was half that of the
Yan model, due to the two modes of interburst interval present in for the TB model but not for the Yan
model (Fig [**??**]).

Where bursting occurs in the Yan model, burst duration for Yan increases more rapidly than TB
as eL increases. For $eL = -55mV$, burst duration is different at all tested g_{NaP} values. Differences in
burst duration between the two models does not change significantly with change in g_{NaP}. For Yan,
bursting does not occur while $eL = -50mV$, while bursting occurs at $eL = -50, \ g_{NaP} = 1.8, 2.4$.
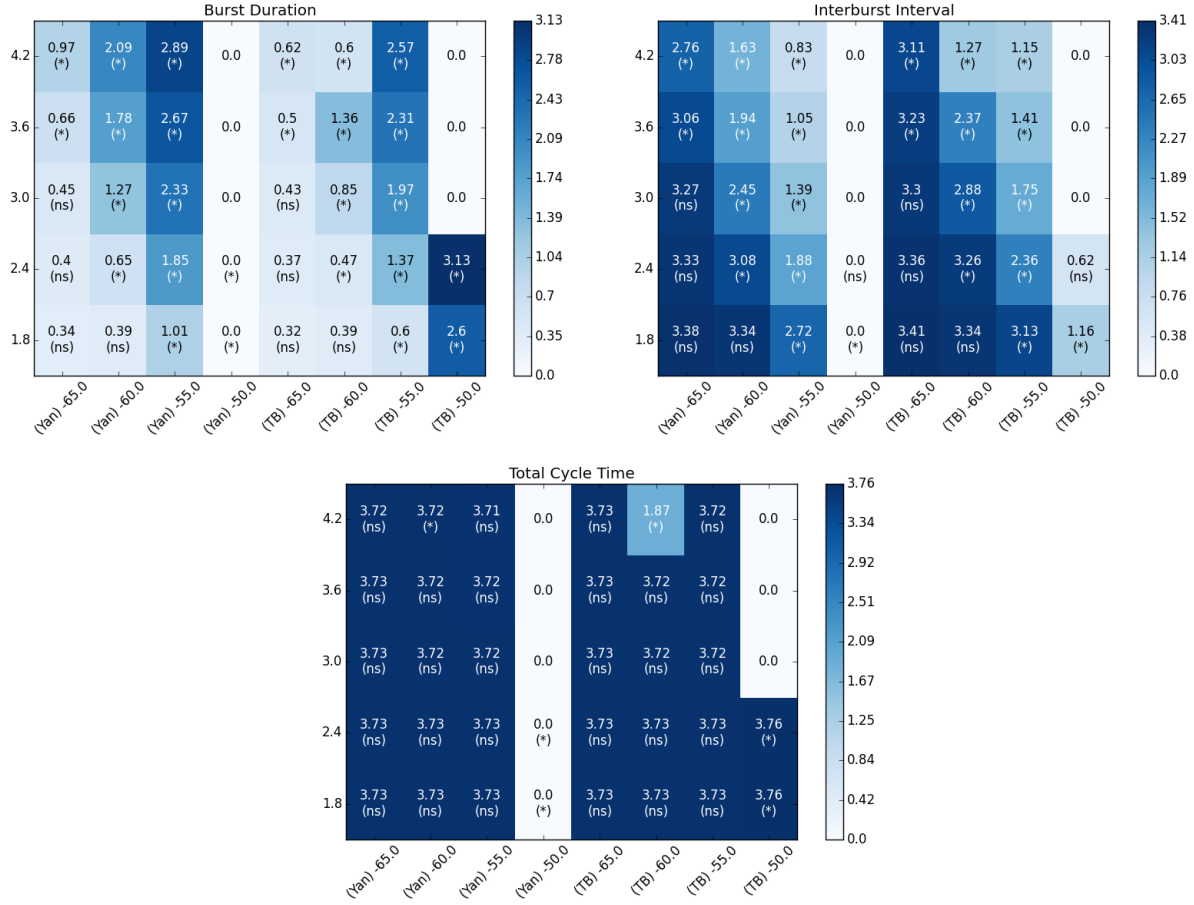
Figure 1: Heat map showing variations in total cycle time with changes in eL, g_{NaP}, and model. Zeroes indicate tonic spiking. Star (*) and (ns) symbols below each value indicates statistical significance between the corresponding cell for the other model.

With one exception, interburst interval and burst duration display the same inter-model pattern of significance. The exception, at $eL = -50.0$, $g_{NaP} = 2.4$ where interburst interval is 0.62 seconds for the TB model and 0 (due to an absence of bursting) for the Yan model. The pattern change in their values the patterns in their values are flipped.

This is unsurprising, since Total Cycle Time, the summation of Interburst interval and burst duration, was nearly invariant across all model-parameter combinations.

1.2   Peaks within Bursts

Yan show significantly more peaks per burst than the TB model in the upper two *gnap* values and the lowest eL value (-55 mV) for which they both display bursting. When low values of eL and *gnap* coincide there is no model-dependent difference in peaks per burst. For peaks-per-burst, Yan

The model-dependence of the

For smaller values of eL (-65, -60) with higher value of *gnap* (3.0, 3.6, and 4.2), TB had a significantly larger intraburst frequency than did Yan. The same occurred for small values of $gNaP$ (1.8, 2.4) at
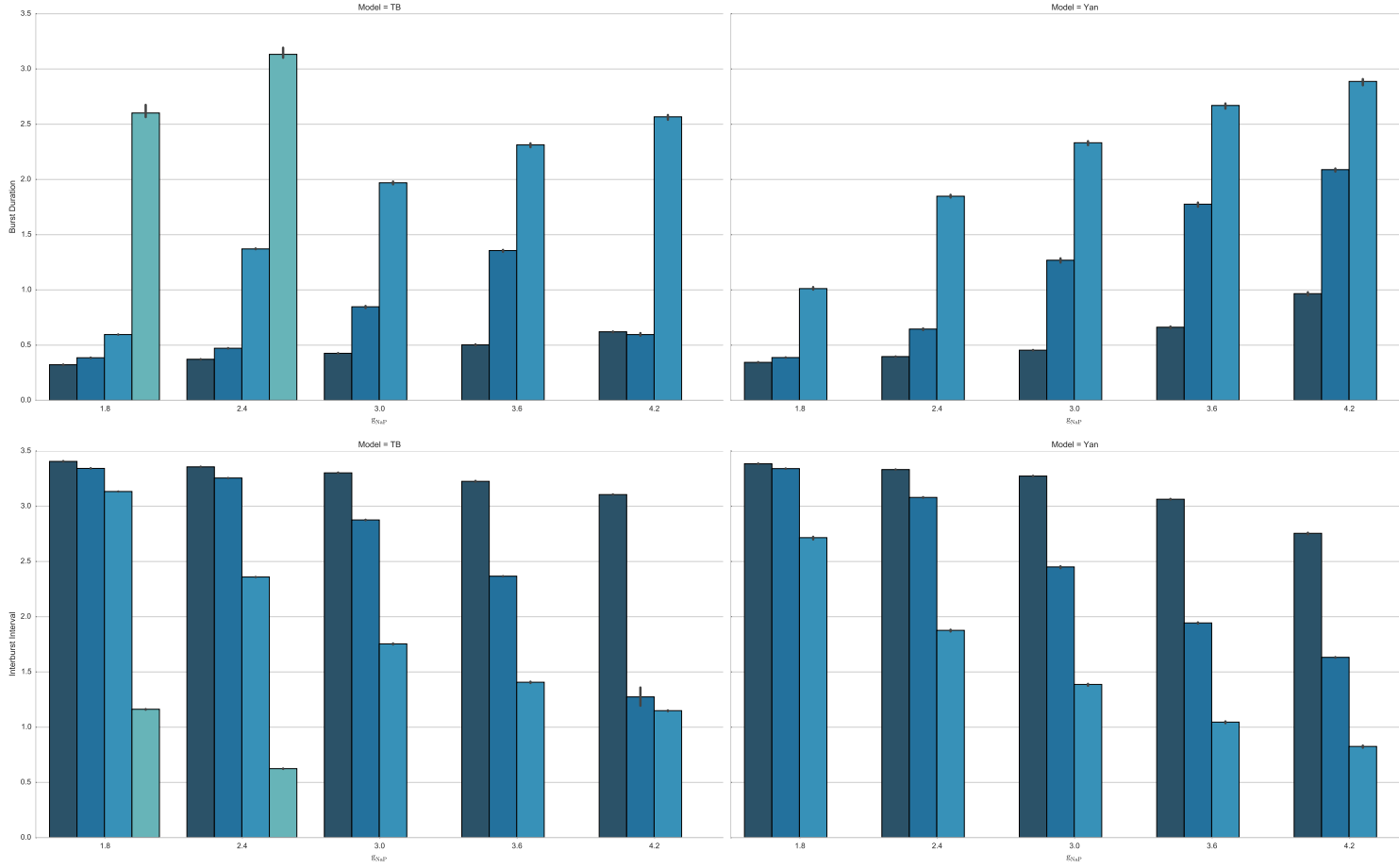
Figure 2

higher values of eL (-55). Interestingly at eL = -65 mV, the difference between the TB and Yan values decrease with decreasing $gnap$, but at eL=-60 the difference increased with decreasing $gnap$. No significant difference occurred between the models for low values of eL at low values of $gnap$ or at high values of eL for high values of $gnap$.

1.3   Peak Measures

Average peak amplitude was showed strong model-dependent significant differences(Figure 4). However, no clear and consistent pattern of increase or decrease occurred, making it difficult to tell if peak amplitude was model-dependent in a meaningful way. Interpeak interval (not pictured) was not model dependent, as no statistical significant difference occurred between same-parameters, different-model time series.

(a) Intraburst Frequency
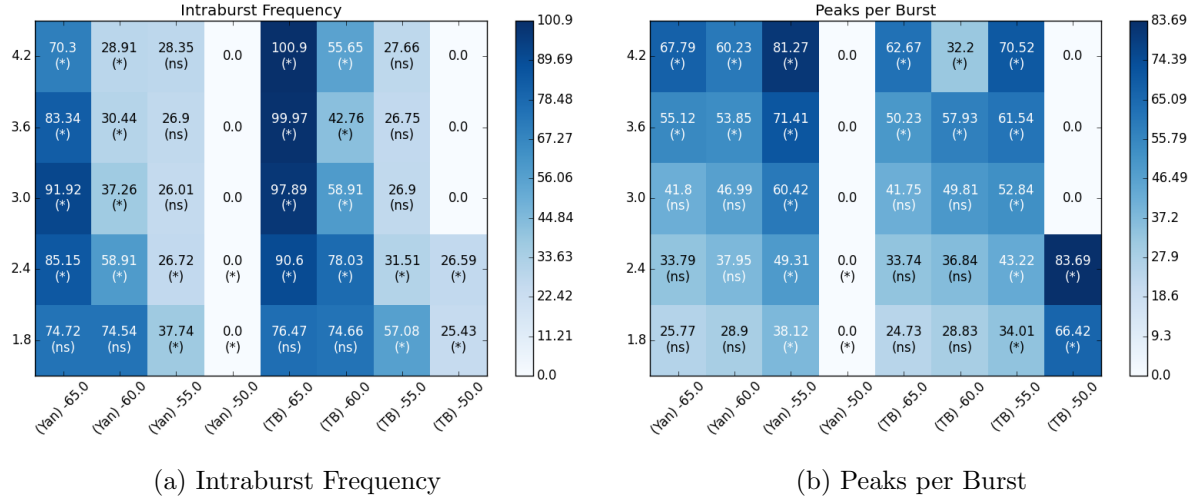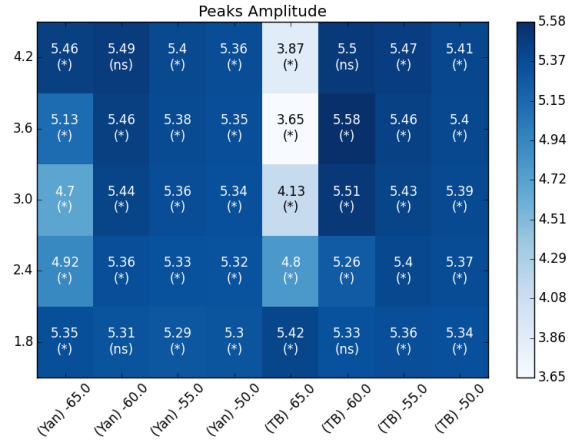
(b) Peaks per Burst

Figure 3

Figure 4: Peak Amplitudes. Stars (*) indicate which cells were significantly different from their other-model counterpart.