

Figure 2: Sensitivity analysis on the observation models

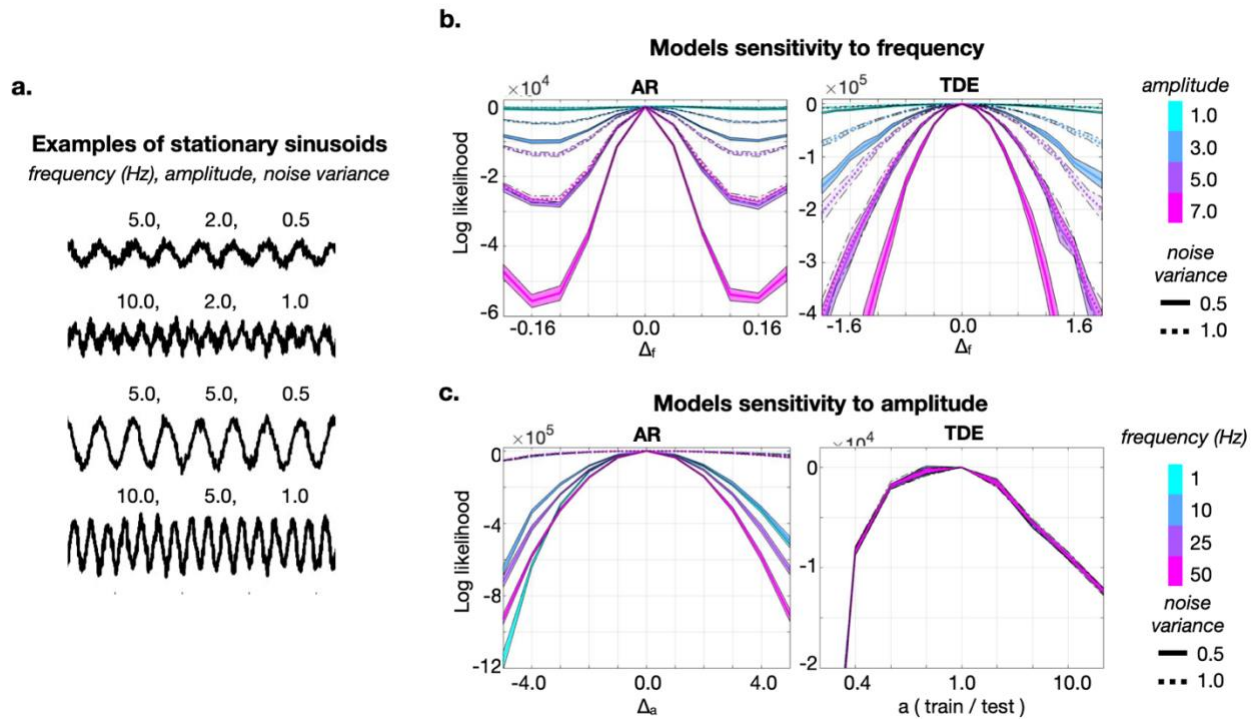


Figure 2: **a.** Example of signals used (stationary sinusoids), each defined by frequency, amplitude and noise variance. **b.** The plots show how the AR (left) and the TDE (right) models can tell apart two signals that differ only in frequency by an amount of Δf Hz (test frequency minus training frequency), for different values of their amplitude and of their noise content. The measure used is the logarithm of the likelihood ratio between train and test signal (given a fixed test signal and models trained on many training signals). Each solid line of the plot represents analyses for noise variance equal to 0.5, and each dotted line corresponds to noise variance equal to 1.0. By manipulating amplitude and noise variance, the plots show how the models perform for different signal to noise ratio (SNR) values. Here, AR order $P=3$, and TDE lags $L=21$, in steps of $S=1$; signal length $T=10$ seconds (25000 data points) **c.** AR and TDE sensitivity to amplitude, expressed as Δa for the AR model (training amplitude minus test amplitude) and as training amplitude in proportion to the target test amplitude (denoted as *train/test*) for the TDE model, for different values of frequency and of noise variance. Order, lags and signal length set as in **b.**