SYM-H Prediction Notes

Daniel Iong

At time t, let

- $y(t)$ denote SYM-H
- $X(t)$ denote the solar wind parameters that are available to us (i.e. what is in the dataset)
- $\tilde{X}(t)$ denote the actual solar wind parameters.

1 Propagation time/Time shift

- Let $\alpha(t) = D/V_x(t)$, where $D \approx 1.5 \times 10^6$ km.
- Our initial goal is to fit a model with the following form:

$$y(t + \alpha(t)) = f\Big(y(t), \ldots, y(t - L\Delta t), \tilde{X}(t + \alpha(t)), \ldots, \tilde{X}(t + \alpha(t) - p\Delta t)\Big)$$