

## Statistics 6871 Project Proposal (D.R. Brillinger)

- Write a brief description of the data you intend to analyze for the Project.
- Give an indication of the source of the dataset.
- Describe the objects of your investigation.
- State the analyses you anticipate completing.

## Statistics 6871 Project

This project is meant to provide you with an opportunity to analyze a dataset of interest to you. Think broadly about which dataset you will work with. These days statistics get to work on basically anything and contemporary computing packages make it easy and often surprising.

The Data:

The data are meant to be from a time series. Think of something you are interested in, be it: biology, physical science, finance sports, engineering, daily life government, etc.. All of these subjects lead to time series data and in many cases the data are available quite directly via the internet. Try to obtain 500 successive equi-spaced observations, although 250 often is satisfactory. (I realize that many datasets on which important decisions are based are shorter, but these numbers will lead to a more satisfying class project.) It is recommended that the series be approximately stationary.

Analyses:

1. Graph the data.
2. Detrend as necessary.
3. Compute an autocorrelation function estimate.
4. Compute the power spectrum estimate.
5. Fit an ARMA or ARIMA model.
6. Check the assumption and iterate the above steps as necessary.

Remember to include the statistical uncertainties going along with the analyses.

Report:

1. Describe the data and source.
2. Set down the scientific question motivating your analyses.
3. For each of the analyses listed above (and other analyses you carry out) discuss the results.
4. Provide your conclusions including final models.
5. Include pertinent figures and programs.
6. Have approximately 4 pages plus graphs.
7. Type it.