**Sebastian Oakes – Computational Neuroscience Coursework 2**

Q1) All done for 1000s of spike time, firing rate of 35Hz

# Spike trains with zero refractory period

*Bin size = 10ms*

Fano factor = 1.0019232026672056 coefficient of variation = 0.9988039889270792

*Bin size = 50ms*

Fano factor = 0.9991372602463154

coefficient of variation = 1.0009683593511125

*Bin size = 100ms*

Fano factor = 1.0067486747810261

coefficient of variation = 1.0033609815319007

# Spike trains with 5ms refractory period

*Bin size = 10ms*

Fano factor = 0.7472530066630444 coefficient of variation = 0.8217687476808799

*Bin size = 50ms*

Fano factor = 0.687211038961039

coefficient of variation = 0.8210689667744108

*Bin size = 100ms*

Fano factor = 0.6912649428074279

coefficient of variation = 0.8286690001450328

Q2)

*Bin size = 10ms*

Fano factor = 1.1176428298912333

coefficient of variation = 2.008552337063215

*Bin size = 50ms*

Fano factor = 2.9282637753959806

coefficient of variation = 2.008552337063215

*Bin size = 100ms*

Fano factor = 4.10213864013731

coefficient of variation = 2.008552337063215

Q3) Spike triggered average for a 100ms window, with the x axis denoting the number of seconds before thespike event. Average of -36ms for optimal spike triggering.