**Simple Examples – One Game**

In this section we give the results for the two LARC models for a couple of simple situations. We begin with two teams. Team 1 beats Team 2 once.

**Bradley-Terry** (BT)

Each of the two teams has a strength, si (i=1,2)

Prior(si) ­­€ s1 exp(-si) where ­­€ means ‘proportional to.’

Note, this prior is a gamma distribution with shape parameter equal to one.

The conditional probability is

s1/(s1+s2)

Hence

posterior(s1,s2| t1 > t2) € s1\*s2\*exp(-s1-s2)(s1/(s1+s2))

**Mosteller** (M)

Prior(si) € SNorm(si) where SNorm(x) is the density of the standard normal at point x.

The conditional probability is

CumSNorm( s1 – s2) where CumSnorm(x) is the cumulative standard normal at point x.

posterior(s1,s2|t1>t2) € SNorm(s1)\*SNorm(s2)\*CumSNorm(s1-s2)

**Results**

BT: s1=1.333; s2=0.6667;prob(t1>t2)=0.6667

M: s1=0.3826; s2=-0.3826;prob(t1>t2)=0.7779