**S4 Text. The geometry of a univariate Normal distribution**

The normal distribution, a member of the exponential family, does not enjoy the geometry of a Euclidean manifold. The Laplace-approximation of a variational density (see [Friston, Mattout et al. 2007](#_ENREF_22)) rests on approximating the posterior distribution with a Normal distribution. Therefore, it becomes instructive to understand its geometry. Calculation shows that the Riemannian metric (the Fisher information) simply reads  for a univariate Normal. Further algebra shows that the non-zero terms of the Levi-Civita connection for a univariate Normal distribution are

 