Errata list for
Khadiga Arwini and C.T.J. Dodson
Information Geometry: Near Randomness and Near Independence
Lecture Notes in Mathematics 1953, Springer-Verlag, Berlin, Heidelberg
2008. http://www.springer.com/math/geometry/book/978-3-540-69391-8

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Chapter 1

Page 17: Replace Figures 1.6 and 1.7 with Figures 1 and 2.

Page 18: Final displayed equation array should read

$$\begin{aligned} \hat{\gamma} &= \bar{X} = \frac{1}{n}\sum_{i=1}^{n} X_i \\ \log\hat{\kappa} - \frac{\Gamma'(\hat{\kappa})}{\Gamma(\hat{\kappa})} &= \log\bar{X} - \overline{\log X} \end{aligned}$$

Final paragraph line 5 should have
$\kappa = 1.7409$,

Chapter 2

Page 27: Equation (2.4) should read:

$$\nabla|_x : T_xM \times T_xM \to T_x : (u, v) \mapsto \nabla_u v, \quad \text{defined over } x \in M. \qquad (2.4)$$

Chapter 3

Page 33: Section 3.2 first paragraph line 3 should read:

be expressed in terms of functions $\{C, F_1, ..., F_n\}$ on Ω and a function φ on

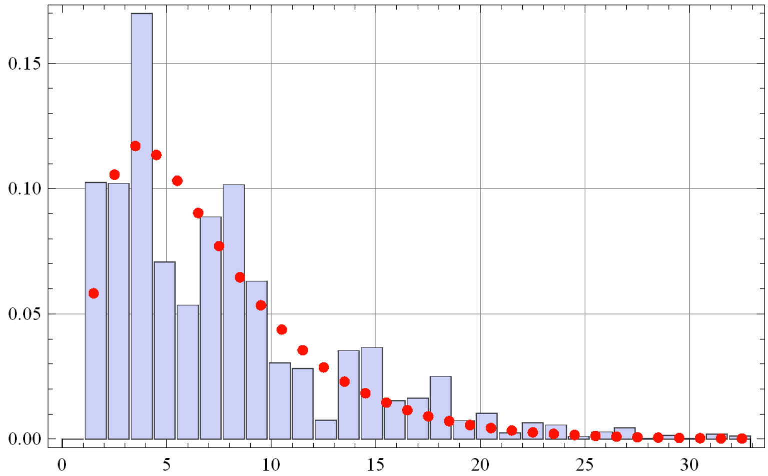

Figure 1: *Probability histogram plot with unit mean for the spacings between the first* 100, 000 *prime numbers and the maximum likelihood gamma fit,* $\kappa = 1.7409$, *(points).*

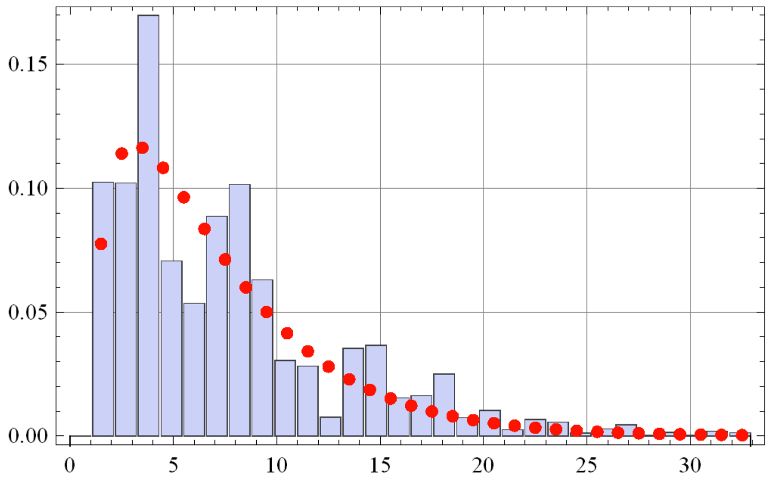

Figure 2: *Probability histogram plot with unit mean for the spacings between the first* 100, 000 *prime numbers and the gamma distribution having the same variance, so* $\kappa = 1.5079$, *(points).*

Chapter 4

Page 88 eq (4.120)

$$f(x,y) = \frac{1}{2\pi\sqrt{\Delta}} \exp\left(-\frac{(x-\mu_1)\left(\sigma_2^2\,(x-\mu_1)+2\sigma_{12}\,(\mu_2-y)\right)+\sigma_1^2\,(y-\mu_2)^{\,2}}{2\Delta}\right), \tag{4.120}$$

with $\Delta = \sigma_1^2\sigma_2^2 - \sigma_{12}^2$

Page 89 eqs (4.122), (4.123) et seq

$$f_X(x) = N_X(\mu_1,\sigma_1) = \frac{1}{\sqrt{2\,\pi}\,\sigma_1}\exp - \frac{(x-\mu_1)^2}{2\,\sigma_1^2}\,, \tag{4.122}$$

$$f_Y(y) = N_Y(\mu_2,\sigma_2) = \frac{1}{\sqrt{2\,\pi}\,\sigma_2}\exp - \frac{(y-\mu_2)^2}{2\,\sigma_2^2}\,. \tag{4.123}$$

The correlation coefficient is:

$$\rho(X,Y) = \frac{\sigma_{12}}{\sigma_1\,\sigma_2}$$

Since ${\sigma_{12}}^2 \neq \sigma_1^2\,\sigma_2^2$ then $-1 < \rho(X,Y) < 1$; so we do not have the case when Y is a linearly increasing (or decreasing) function of X.

eqs (4.124), (4.125)

$$G = [g_{ij}] = \begin{pmatrix} \frac{\sigma_2^2}{\Delta} & -\frac{\sigma_{12}}{\Delta} & 0 & 0 & 0 \\ -\frac{\sigma_{12}}{\Delta} & \frac{\sigma_1^2}{\Delta} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sigma_2^4}{2\Delta^2} & -\frac{\sigma_2^2\sigma_{12}}{\Delta^2} & \frac{\sigma_{12}^2}{2\Delta^2} \\ 0 & 0 & -\frac{\sigma_2^2\sigma_{12}}{\Delta^2} & \frac{\sigma_1^2\sigma_2^2+\sigma_{12}^2}{\Delta^2} & -\frac{\sigma_1^2\sigma_{12}}{\Delta^2} \\ 0 & 0 & \frac{\sigma_{12}^2}{2\Delta^2} & -\frac{\sigma_1^2\sigma_{12}}{\Delta^2} & \frac{\sigma_1^4}{2\Delta^2} \end{pmatrix} \tag{4.124}$$

$$G^{-1} = [g^{ij}] = \begin{pmatrix} \sigma_1^2 & \sigma_{12} & 0 & 0 & 0 \\ \sigma_{12} & \sigma_2^2 & 0 & 0 & 0 \\ 0 & 0 & 2\sigma_1^4 & 2\sigma_1^2\sigma_{12} & 2\sigma_{12}^2 \\ 0 & 0 & 2\sigma_1^2\sigma_{12} & \sigma_1^2\sigma_2^2+\sigma_{12}^2 & 2\sigma_2^2\sigma_{12} \\ 0 & 0 & 2\sigma_{12}^2 & 2\sigma_2^2\sigma_{12} & 2\sigma_2^4 \end{pmatrix} \tag{4.125}$$

Chapter 7

Page 140: First lines after Table 7.1 should read:
space of processes subordinate to gamma distributions—which latter include the Poisson process as a special case.

Chapter 9

Page 168: Equation (9.8) should read:

$$p(\tilde{c};\mu,\alpha) \approx \frac{1}{\Gamma(\alpha)}\left(\frac{1}{\tilde{c}}\right)^{1-\frac{\alpha}{\mu}}\left(\frac{\alpha}{\mu}\right)^{\alpha}\left(\log\frac{1}{\tilde{c}}\right)^{\alpha-1}. \tag{9.8}$$