## 1 Thermodynamics of the Creagh-Whelan system

$$H^{(\kappa)} = T + V = \frac{1}{2} \left( p_x^2 + p_y^2 \right) + \left( x^2 - 1 \right)^{\kappa} + Ax + Bxy^2 + Cx^2y^2 + \mu y^2 \tag{1}$$

The following figures are calculated for  $\kappa = 2$ ,  $B = C = \mu = 20$  (a slightly asymmetric case, for more details see the web site).



Figure 1: Level density.



Figure 2: First derivative of the level density.



Figure 3: Logarithm of the level density.



Figure 4: Inverse temperature.



Figure 5: Normalized thermal distribution.



Figure 6: Normalized thermal distribution.