0.1 Two-Component Gaussian Mixtures $p^{(a)}$

$$ {}^{(1)}_{1}\sigma_x^2 = \begin{cases} 0.002 \times (\sin x + 1.0) & 2.0 \leq x \leq 3.0 \\ 0.002 & \text{otherwise} \end{cases} \tag{1} $$

$$ {}^{(1)}_{1}\sigma_y^2 = \begin{cases} 0.002 \times (\sin y + 0.5) & 2.0 \leq y \leq 3.0 \\ 0.002 & \text{otherwise} \end{cases} \tag{2} $$

$$ {}^{(1)}_{2}\sigma_x^2 = \begin{cases} 0.003 \times (\sin x + 1.0) & 2.0 \leq x \leq 3.0 \\ 0.003 & \text{otherwise} \end{cases} \tag{3} $$

$$ {}^{(1)}_{2}\sigma_y^2 = \begin{cases} 0.003 \times (\sin y + 0.5) & 2.0 \leq y \leq 3.0 \\ 0.003 & \text{otherwise} \end{cases} \tag{4} $$

$$ \begin{aligned} {}^{(1)}_{1}\sigma_\theta^2 &= 1.0e^{-4}, \;\; {}^{(1)}_{1}\sigma_v^2 = 1.0e^{-3} \\ {}^{(1)}_{2}\sigma_\theta^2 &= 1.0e^{-4}, \;\; {}^{(1)}_{2}\sigma_v^2 = 4.0e^{-3} \end{aligned} \tag{5} $$

0.2 Three-Component Gaussian Mixtures $p^{(b)}$

$$ {}^{(2)}_{1}\sigma_x^2 = \begin{cases} 0.001 \times (2.0x + 1.0) & 2.0 \leq x \leq 3.0 \\ 0.001 & \text{otherwise} \end{cases} \tag{6} $$

$$ {}^{(2)}_{1}\sigma_y^2 = \begin{cases} 0.001 \times (2.0y + 1.0) & 2.0 \leq y \leq 3.0 \\ 0.001 & \text{otherwise} \end{cases} \tag{7} $$

$$ {}^{(2)}_{2}\sigma_x^2 = \begin{cases} 0.003 \times (2.0x + 1.0) & 2.0 \leq x \leq 3.0 \\ 0.002 & \text{otherwise} \end{cases} \tag{8} $$

$$ {}^{(2)}_{2}\sigma_y^2 = \begin{cases} 0.003 \times (2.0y + 1.0) & 2.0 \leq y \leq 3.0 \\ 0.002 & \text{otherwise} \end{cases} \tag{9} $$

$$ {}^{(2)}_{3}\sigma_x^2 = \begin{cases} 0.005 \times (2.0x + 1.0) & 2.0 \leq x \leq 3.0 \\ 0.003 & \text{otherwise} \end{cases} \tag{10} $$

$$ {}^{(2)}_{3}\sigma_y^2 = \begin{cases} 0.005 \times (0.5y + 1.0) & 2.0 \leq y \leq 3.0 \\ 0.003 & \text{otherwise} \end{cases} \tag{11} $$

$$ \begin{aligned} {}^{(2)}_{1}\sigma_\theta^2 &= 1.0e^{-4}, \;\; {}^{(2)}_{1}\sigma_v^2 = 1.0e^{-3} \\ {}^{(2)}_{2}\sigma_\theta^2 &= 1.0e^{-4}, \;\; {}^{(2)}_{2}\sigma_v^2 = 4.0e^{-3} \\ {}^{(2)}_{3}\sigma_\theta^2 &= 4.0e^{-4}, \;\; {}^{(2)}_{3}\sigma_v^2 = 4.0e^{-3} \end{aligned} \tag{12} $$

0.3 Four-Component Gaussian Mixtures $p^{(c)}$

$$ {}^{(3)}_{1}\sigma_x^2 = 0.001 \times (5 - \sqrt{|x|}) \tag{13} $$

$$ {}^{(3)}_{1}\sigma_y^2 = 0.001 \times (5 - \sqrt{|y|}) \tag{14} $$

$$ {}^{(3)}_{2}\sigma_x^2 = 0.002 \times \frac{6}{x + 1.0} \tag{15} $$

$$ {}^{(3)}_{2}\sigma_y^2 = 0.002 \times \frac{6}{y + 1.0} \tag{16} $$

$$ {}^{(3)}_{3}\sigma_x^2 = \begin{cases} 0.003 \times (x + 1.0) & 2.0 \leq x \leq 3.0 \\ 0.003 & \text{otherwise} \end{cases} \tag{17} $$

$$ {}^{(3)}_{3}\sigma_y^2 = \begin{cases} 0.003 \times (y + 1.0) & 2.0 \leq y \leq 3.0 \\ 0.003 & \text{otherwise} \end{cases} \tag{18} $$

$$ {}^{(3)}_{4}\sigma_x^2 = 0.004 \tag{19} $$

$$ {}^{(3)}_{4}\sigma_x^2 = 0.004 \tag{20} $$

$$ \begin{aligned} {}^{(3)}_{1}\sigma_\theta^2 &= 1.0e^{-4}, \;\; {}^{(3)}_{1}\sigma_v^2 = 1.0e^{-3} \\ {}^{(3)}_{2}\sigma_\theta^2 &= 1.0e^{-4}, \;\; {}^{(3)}_{2}\sigma_v^2 = 4.0e^{-3} \\ {}^{(3)}_{3}\sigma_\theta^2 &= 1.0e^{-4}, \;\; {}^{(3)}_{3}\sigma_v^2 = 4.0e^{-3} \\ {}^{(3)}_{4}\sigma_\theta^2 &= 4.0e^{-4}, \;\; {}^{(3)}_{4}\sigma_v^2 = 4.0e^{-3} \end{aligned} \tag{21} $$