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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$_1^{(3)}\sigma_x^2 = 0.001 \times (5 - \sqrt{|x|}) \tag{13}$$

$$_1^{(3)}\sigma_y^2 = 0.001 \times (5 - \sqrt{|y|}) \tag{14}$$

$$_2^{(3)}\sigma_x^2 = 0.002 \times \frac{6}{x + 1.0} \tag{15}$$

$$_2^{(3)}\sigma_y^2 = 0.002 \times \frac{6}{y + 1.0} \tag{16}$$

$$_3^{(3)}\sigma_x^2 = \begin{cases} 0.003 \times (x + 1.0) & 2.0 \le x \le 3.0 \\ 0.003 & \text{otherwise} \end{cases} \tag{17}$$

$$_3^{(3)}\sigma_y^2 = \begin{cases} 0.003 \times (y + 1.0) & 2.0 \le y \le 3.0 \\ 0.003 & \text{otherwise} \end{cases} \tag{18}$$

$$_4^{(3)}\sigma_x^2 = 0.004 \tag{19}$$

$$_4^{(3)}\sigma_y^2 = 0.004 \tag{20}$$

$$
\begin{aligned}
_1^{(3)}\sigma_\theta^2 &= 1.0e^{-4}, \quad _1^{(3)}\sigma_v^2 = 1.0e^{-3} \\
_2^{(3)}\sigma_\theta^2 &= 1.0e^{-4}, \quad _2^{(3)}\sigma_v^2 = 4.0e^{-3} \\
_3^{(3)}\sigma_\theta^2 &= 1.0e^{-4}, \quad _3^{(3)}\sigma_v^2 = 4.0e^{-3} \\
_4^{(3)}\sigma_\theta^2 &= 4.0e^{-4}, \quad _4^{(3)}\sigma_v^2 = 4.0e^{-3}
\end{aligned} \tag{21}
$$