$$P(B|JM) = \alpha P(B) \sum_f P(f) \sum_r P(r|Bf) P(J|r) P(M|r)$$

$$f_M(r) = \begin{bmatrix} 0.7 \\ 0.01 \end{bmatrix}^{r}_{\begin{matrix} R \\ \bar{R} \end{matrix}} \quad f_J(r) = \begin{bmatrix} 0.9 \\ 0.05 \end{bmatrix}^{r}_{\begin{matrix} R \\ \bar{R} \end{matrix}} \quad f_F(f) = \begin{bmatrix} 0.002 \\ 0.998 \end{bmatrix}^{f}_{\begin{matrix} F \\ \bar{F} \end{matrix}}$$

$$f_R(rBf) = \begin{bmatrix} 0.95 \\ 0.94 \\ 0.05 \\ 0.06 \end{bmatrix}^{r\ f}_{\begin{matrix} R\ F \\ R\ \bar{F} \\ \bar{R}\ F \\ \bar{R}\ \bar{F} \end{matrix}}$$

$$P(B|JM) = \alpha P(B) \sum_f P(f) \sum_r f_R(rBf) \times f_J(r) \times f_M(r)$$

$$= \alpha P(B) \sum_f P(f) \sum_r \begin{bmatrix} 0.95 \\ 0.94 \\ 0.05 \\ 0.06 \end{bmatrix} \times \begin{bmatrix} 0.9 \\ 0.05 \end{bmatrix} \times \begin{bmatrix} 0.7 \\ 0.01 \end{bmatrix}$$

$$= \alpha P(B) \sum_f P(f) \sum_r \begin{bmatrix} 0.95 \times 0.9 \times 0.7 \\ 0.94 \times 0.9 \times 0.7 \\ 0.05 \times 0.05 \times 0.01 \\ 0.06 \times 0.05 \times 0.01 \end{bmatrix}^{r\ f}_{\begin{matrix} R\ F \\ R\ \bar{F} \\ \bar{R}\ F \\ \bar{R}\ \bar{F} \end{matrix}} \quad (+)\ (+)$$

$$\begin{bmatrix} 0.95 \times 0.9 \times 0.7 + 0.05 \times 0.05 \times 0.01 \\ 0.94 \times 0.9 \times 0.7 + 0.06 \times 0.05 \times 0.01 \end{bmatrix}^{f}_{\begin{matrix} F \\ \bar{F} \end{matrix}} \quad (*)$$

$$f_{\bar{R}JM}(Bf) \qquad \begin{bmatrix} (a) \\ (b) \end{bmatrix}$$

$$= \alpha P(B) \sum_f f_F(f) f_{\bar{R}JM}(Bf)$$

$$\begin{bmatrix} 0.002 \\ 0.998 \end{bmatrix} \times \begin{bmatrix} * \end{bmatrix}$$

$$= \alpha P(B) \left[0.002 \times (a) + 0.998 \times (b) \right] = \alpha P_1$$

$$P(\bar{B}|JM) = \alpha \cdots\cdots = \alpha P_2$$

$$P(B|JM) + P(\bar{B}|JM) = \alpha (P_1 + P_2) = 1 \qquad \alpha = \frac{1}{P_1 + P_2}$$

$$P(B|JM) = \frac{P_1}{P_1 + P_2}$$