Maß- und Wahrscheinlichkeitstheorie 2 - Übung 13

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Aufgabe 1. *Aufgabe 4*

Lösung.

$$\mathbb{P}([X_V = A] \mid [X_M = AB] \cap [X_K = AB]) = \frac{\mathbb{P}(X_V = A)\mathbb{P}(X_M = AB)\mathbb{P}([X_K = AB] \mid [X_V = A] \cap [X_M = AB])}{\mathbb{P}(X_K = AB \mid X_M = AB)\mathbb{P}(X_M = AB)}$$

$$\mathbb{P}(X_V = A) = p_a^2 + 2p_a p_o$$

$$\mathbb{P}([X_K = AB] \mid [X_V = A] \cap [X_M = AB]) = \mathbb{P}(X_{K,1} = a \mid X_V = A)\mathbb{P}(X_{K,2} = b \mid X_M = AB)$$

$$\mathbb{P}(X_{K,1} = a \mid X_V = a) = \frac{p_a^2}{p_a^2 + 2p_a p_o} + \frac{1}{2}\left(1 - \frac{p_a^2}{p_a^2 + 2p_a p_o}\right) = \frac{28}{47}$$