

Mathematical Statistics, Winter semester 2021/22
Problem sheet 3

- 7) Show that the Hellinger affinity, and therefore the Hellinger distance as well, do not depend on the choice of a dominating σ -finite measure μ .

Hint: See the proof of Lemma 2.1. (Uniqueness of a maximum likelihood estimator)

- 8) Let $X_1, \dots, X_n \sim \text{Bin}(1, \theta)$ be independent random variables, $\theta \in \Theta := [0, 1]$.
Compute the maximum likelihood estimator of θ .

- 9) Let X_1, \dots, X_n be i.i.d. with $X_i \sim \text{Uniform}([\theta_1, \theta_2])$, where $-\infty < \theta_1 < \theta_2 < \infty$.
- (i) Compute the moment estimator of $\theta = (\theta_1, \theta_2)^T$.
 - (ii) Compute the maximum likelihood estimator of θ .