Statistische Methoden der Datenanalyse

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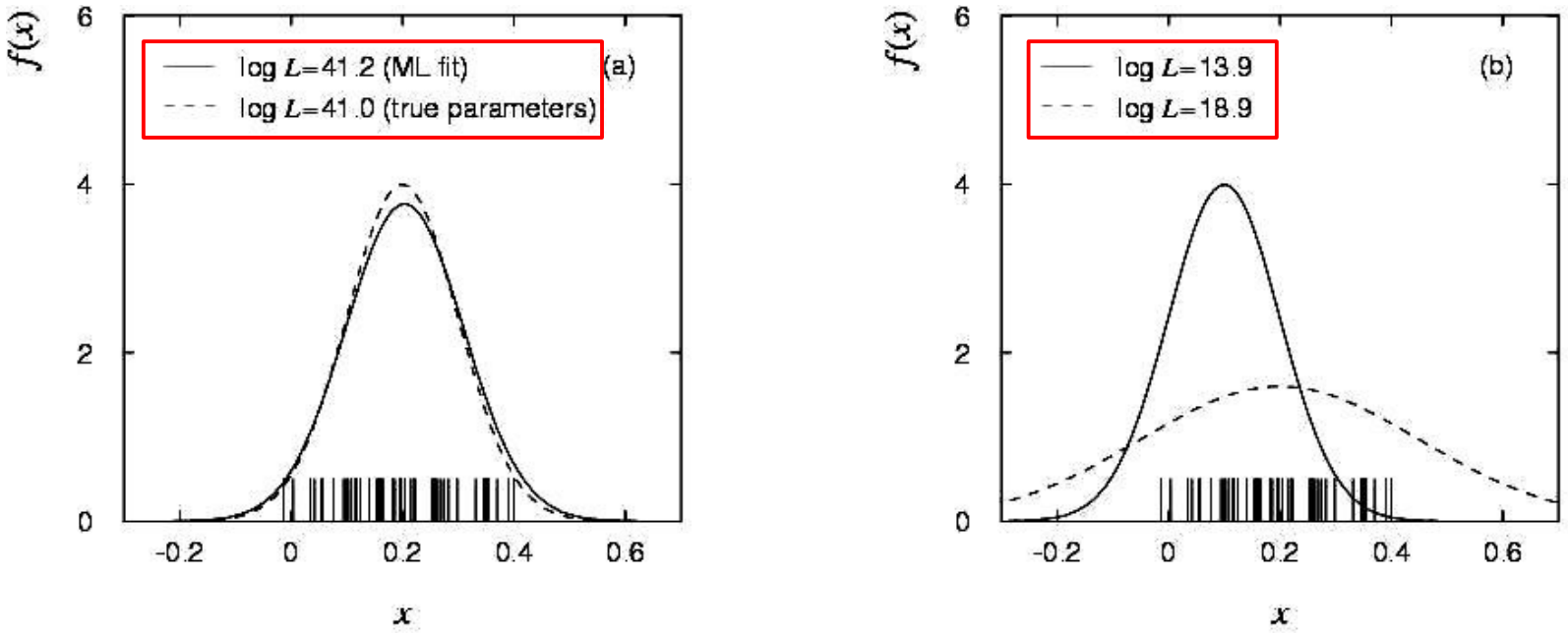
BOK-Veranstaltung im Rahmen des ZfS

- Kapitel 5: Die Maximum-Likelihood-Methode (ML)

Falls angenommene θ nahe an θ_{wahr} => log(L) ist groß

Falls angenommene θ weit weg von θ_{wahr} => log(L) ist klein



Gauss: mu=5, sigma=1

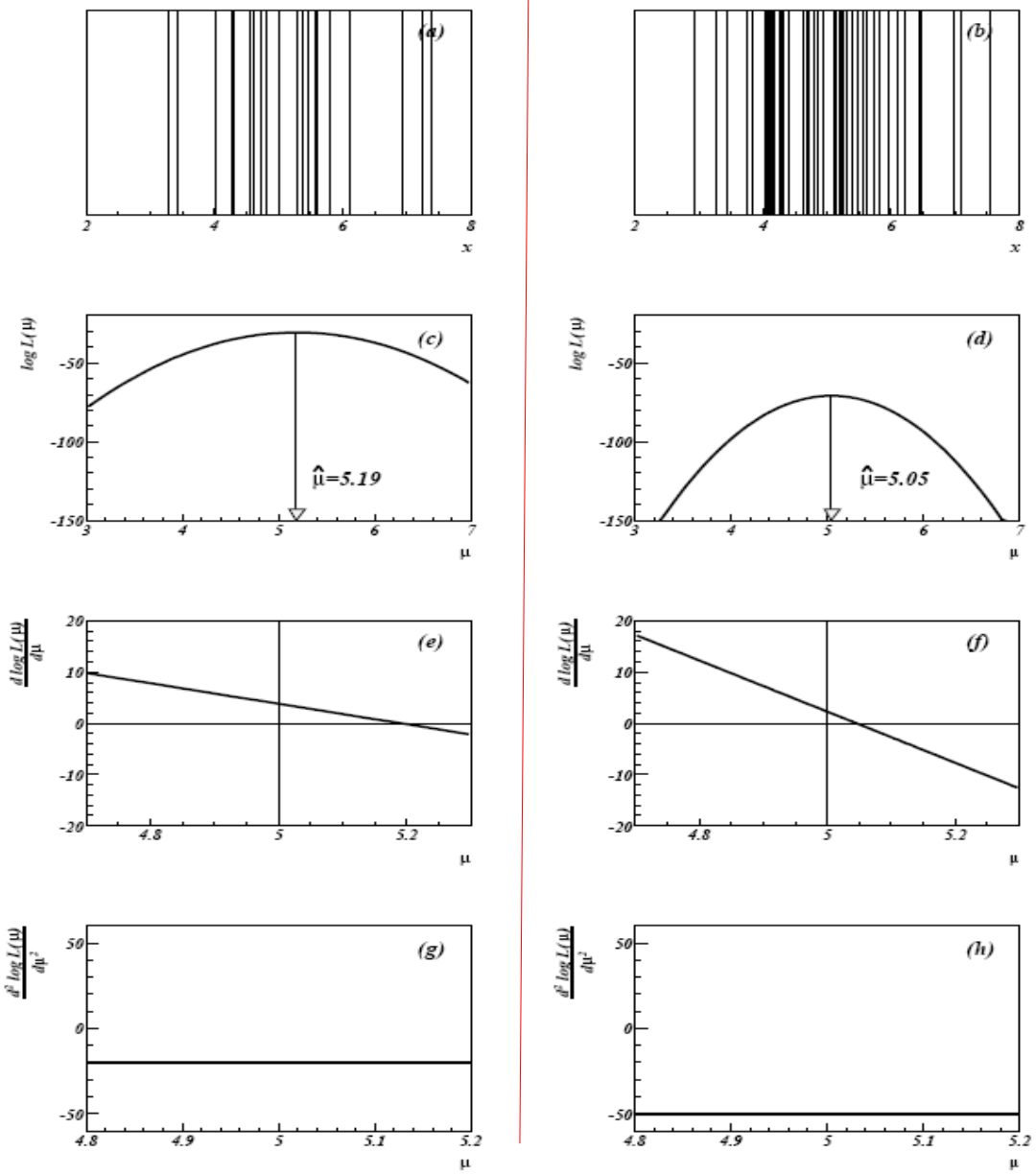
(a), (c), (e), (g): Stichprobe, n=20

(b), (d), (j), (h): Umfang n=50

Größere n
=> schmalere log(L)
=> besser bestimmter Schätzwert

n = 20

n = 50



WDF: $f(t;\tau) = \frac{1}{\tau} e^{-t/\tau}$

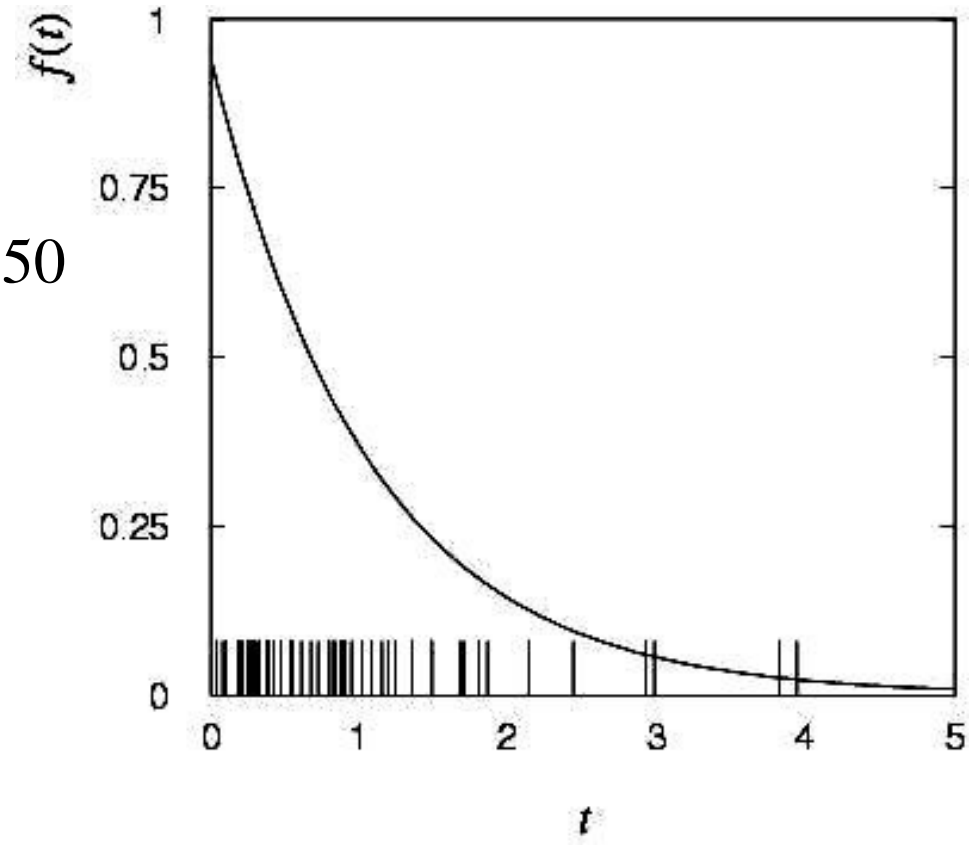
ML-Schätzer für τ: $\hat{\tau} = \frac{1}{n} \sum_{i=1}^{n} t_i$

Monte Carlo Test:

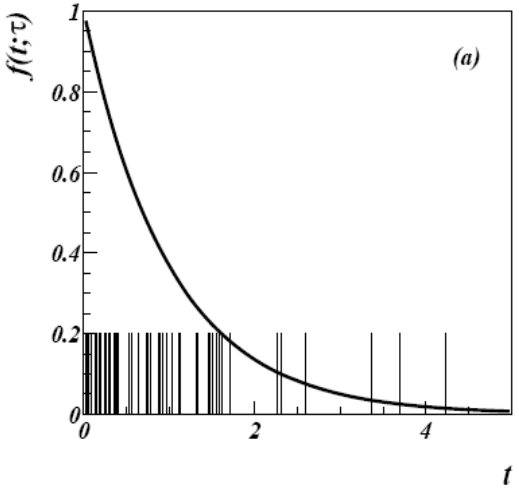
Stichprobe mit Umfang n=50 generieren für $\tau = 1$

Der ML-Schätzwert ist:

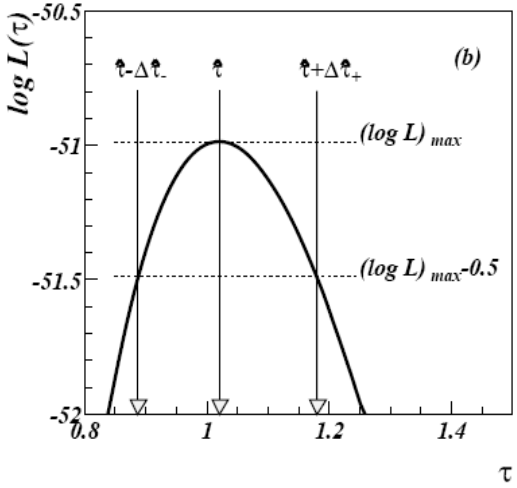
$\hat{\tau} = 1.062$

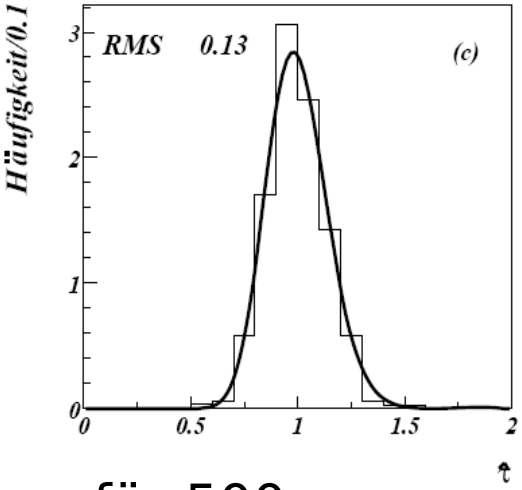


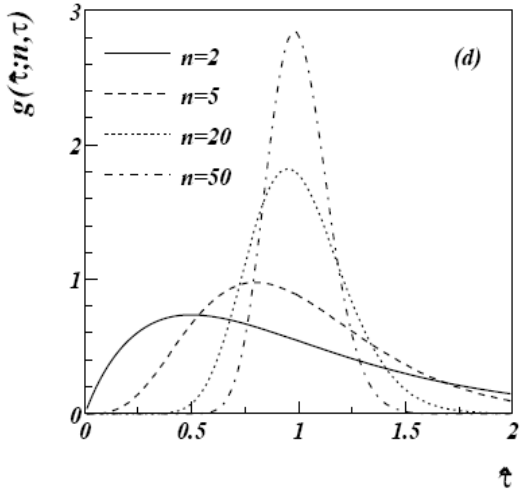
WDF und 1 Stichprobe, n=50



log L(τ) Funktion der Stichprobe







ML-Schätzer für 500 Stichproben, jeweils n=50

WDF der ML-Schätzwert