

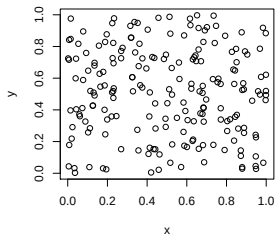
Blockpraktikum zur Statistik mit R

06. Oktober 2010

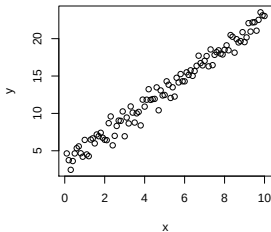
Till Breuer, Sebastian Mentemeier und Matti Schneider

Verschiedene Arten funktionaler Abhängigkeiten

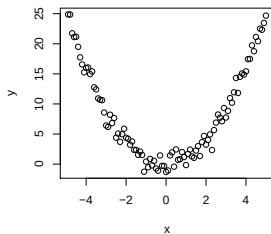
Kein Zusammenhang



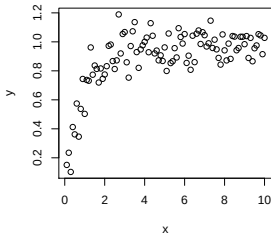
Linearer Zusammenhang



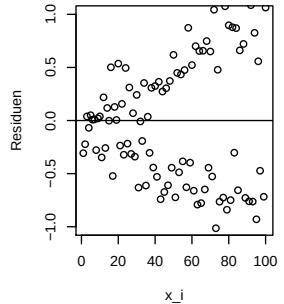
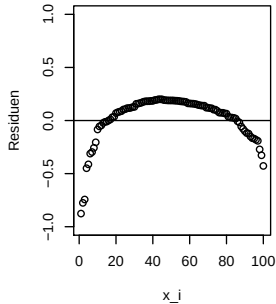
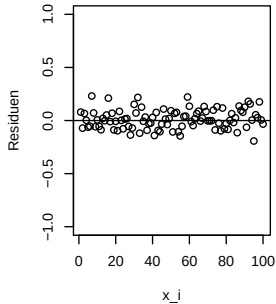
Quadratischer Zusammenhang



Exponentieller Zusammenhang



Verschiedene Residualplots



Beispiel: Photoeffekt

In unserem anfänglichen Beispiel des Photoeffektes könnte ein Versuch mit Bleisulfid folgende Messwerte ergeben:

f in 10^{14} Hz	5.187	5.491	6.876	7.402	8.191
E_{kin} in 10^{-19} J	1.13683	1.32419	2.24884	2.52618	3.00719

Call:

```
lm(formula = Energie.in.J ~ Frequenz.in.Hz)
```

Residuals:

1	2	3	4	5
-8.176e-22	-1.127e-21	4.570e-21	-6.487e-22	-1.977e-21

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-2.105e-19	7.954e-21	-26.46	0.000118	***
Frequenz.in.Hz	6.265e-34	1.183e-35	52.98	1.48e-05	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.009e-21 on 3 degrees of freedom

Multiple R-squared: 0.9989, Adjusted R-squared: 0.9986

F-statistic: 2806 on 1 and 3 DF, p-value: 1.481e-05