

# Statistische Methoden der Datenanalyse

Prof. Markus Schumacher

ALU Freiburg, Wintersemester 2009/2010

BOK-Veranstaltung im Rahmen des ZfS

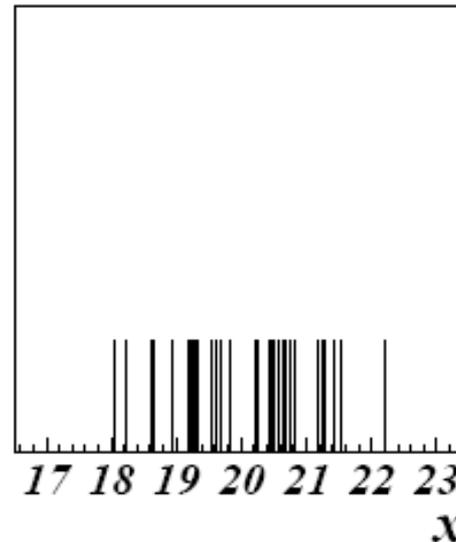
- Kapitel 0: Beschreibung von Daten

# Darstellung von Daten

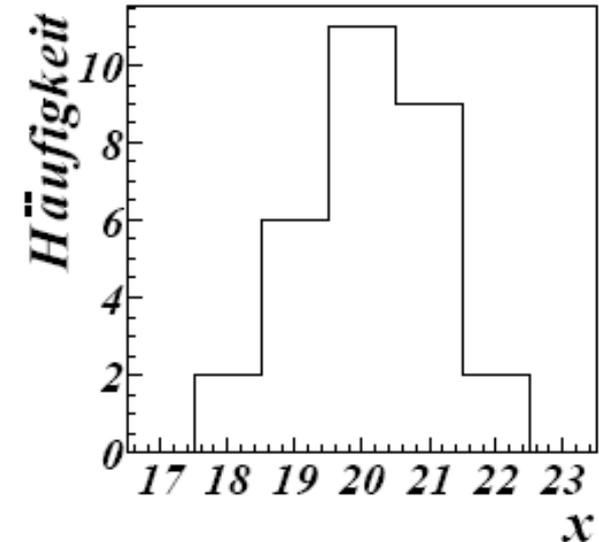
Tabelle

$x^{[00]}$	= 18.21	$x^{[15]}$	= 20.21
$x^{[01]}$	= 20.63	$x^{[16]}$	= 19.6
$x^{[02]}$	= 19.24	$x^{[17]}$	= 19.69
$x^{[03]}$	= 20.24	$x^{[18]}$	= 19.3
$x^{[04]}$	= 19.21	$x^{[19]}$	= 20.49
$x^{[05]}$	= 21.25	$x^{[20]}$	= 19.62
$x^{[06]}$	= 19.69	$x^{[21]}$	= 20.67
$x^{[07]}$	= 20.73	$x^{[22]}$	= 20.56
$x^{[08]}$	= 20.43	$x^{[23]}$	= 18.62
$x^{[09]}$	= 18.05	$x^{[24]}$	= 20.46
$x^{[10]}$	= 21.52	$x^{[25]}$	= 18.64
$x^{[11]}$	= 21.41	$x^{[26]}$	= 22.22
$x^{[12]}$	= 18.95	$x^{[27]}$	= 21.16
$x^{[13]}$	= 19.83	$x^{[28]}$	= 19.54
$x^{[14]}$	= 20.81	$x^{[29]}$	= 21.27

Balkendiagramm



Histogramm



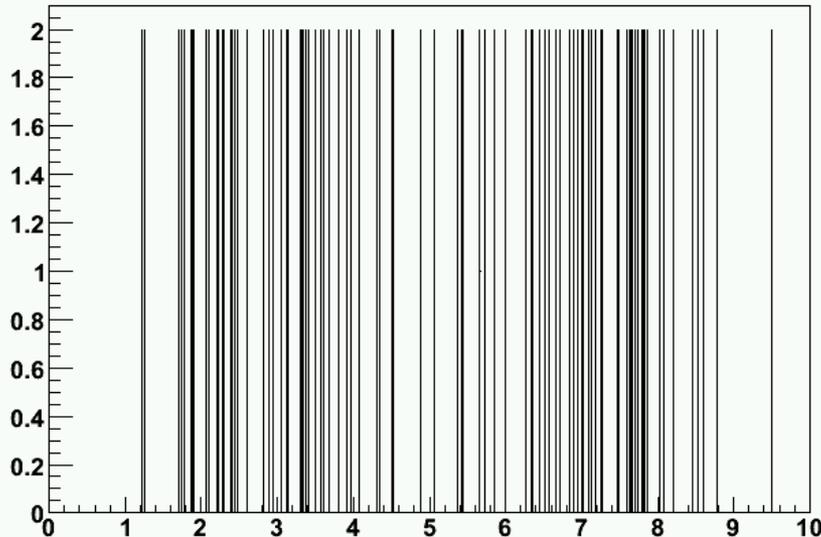
# Wahl des Binning

- Stichprobe vom Umfang 100
- Gezogen aus  $\text{Gauss}(m=3,s=1)+\text{Gauss}(m=7,s=1)$
- Mean (correct) aus Einzelwerten
- Mean(binned hist) aus Binmittelwerten und Binhäufigkeit

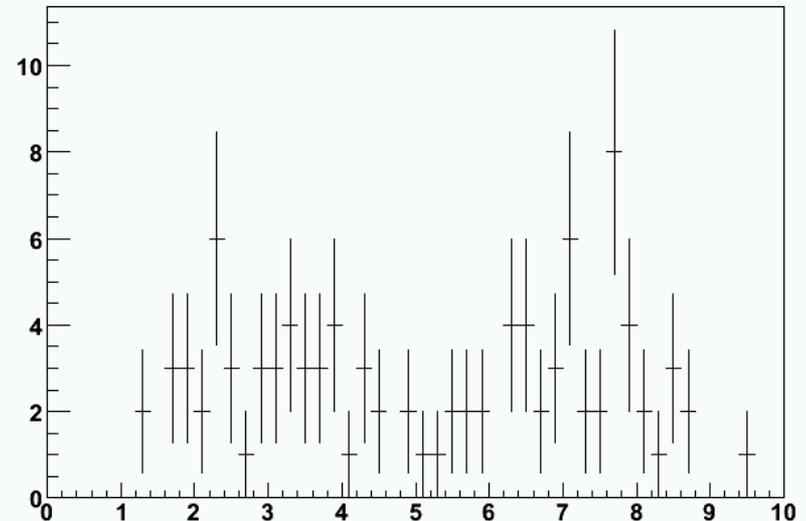
Kein Binning

50 Bins

Mean(correct) = 5.16778959, Mean(binned hist) = 5.16779947

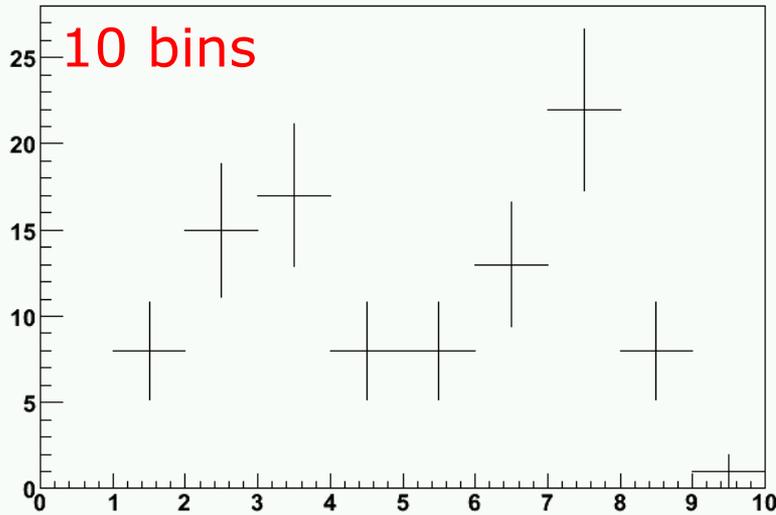


Mean(correct) = 5.16778959, Mean(binned hist) = 5.17999983

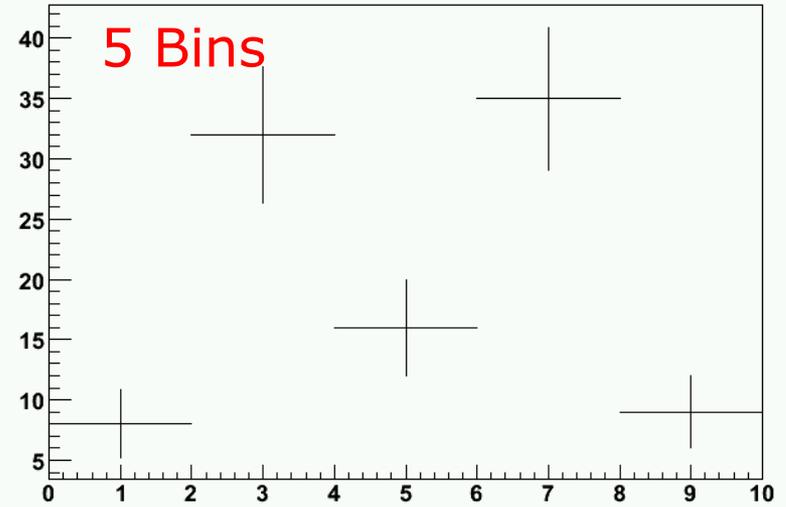


# Wahl des Binning

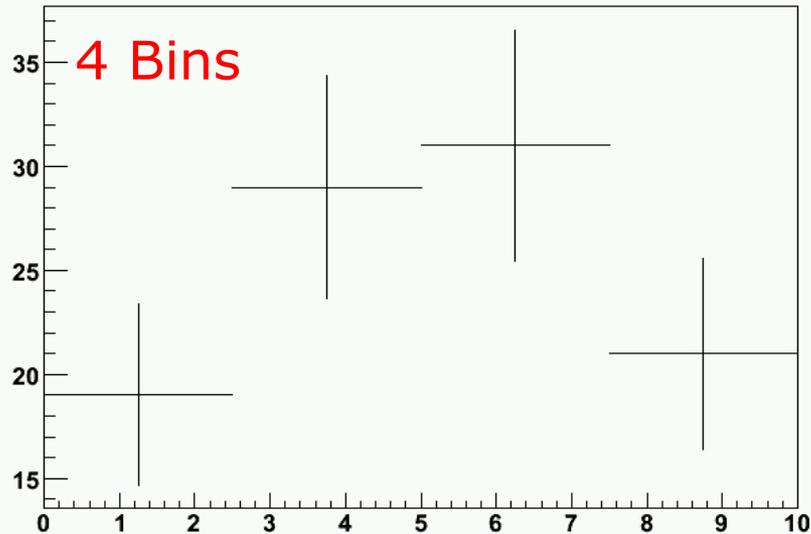
Mean(correct) = 5.16778959, Mean(binned hist) = 5.1599985



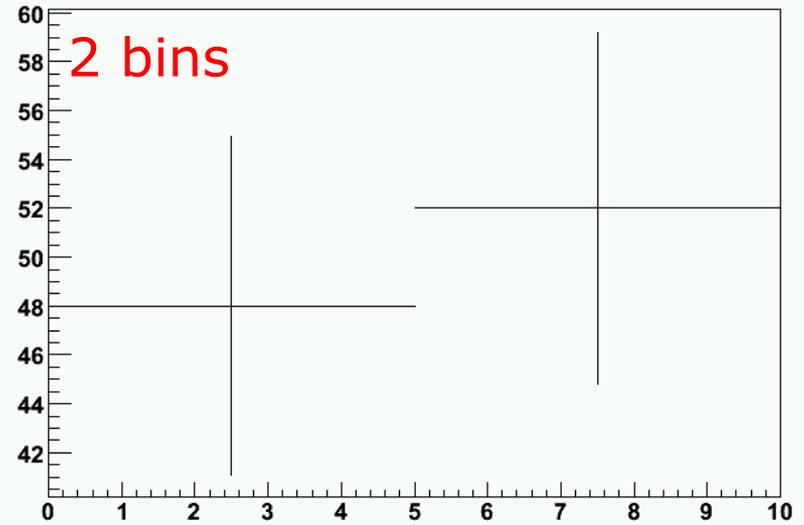
Mean(correct) = 5.16778959, Mean(binned hist) = 5.0999999



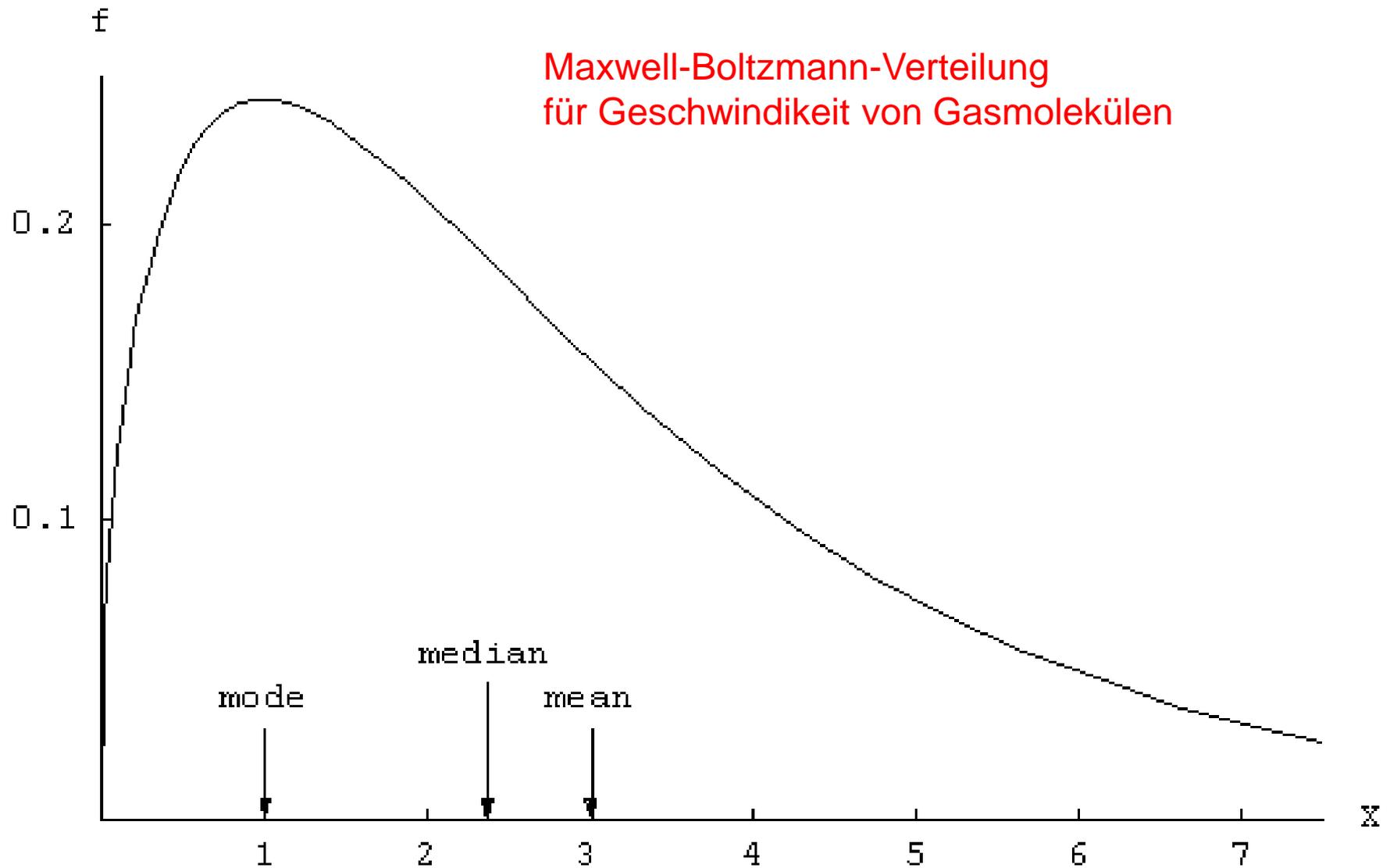
Mean(correct) = 5.16778959, Mean(binned hist) = 5.0999999



Mean(correct) = 5.16778959, Mean(binned hist) = 5.0999999

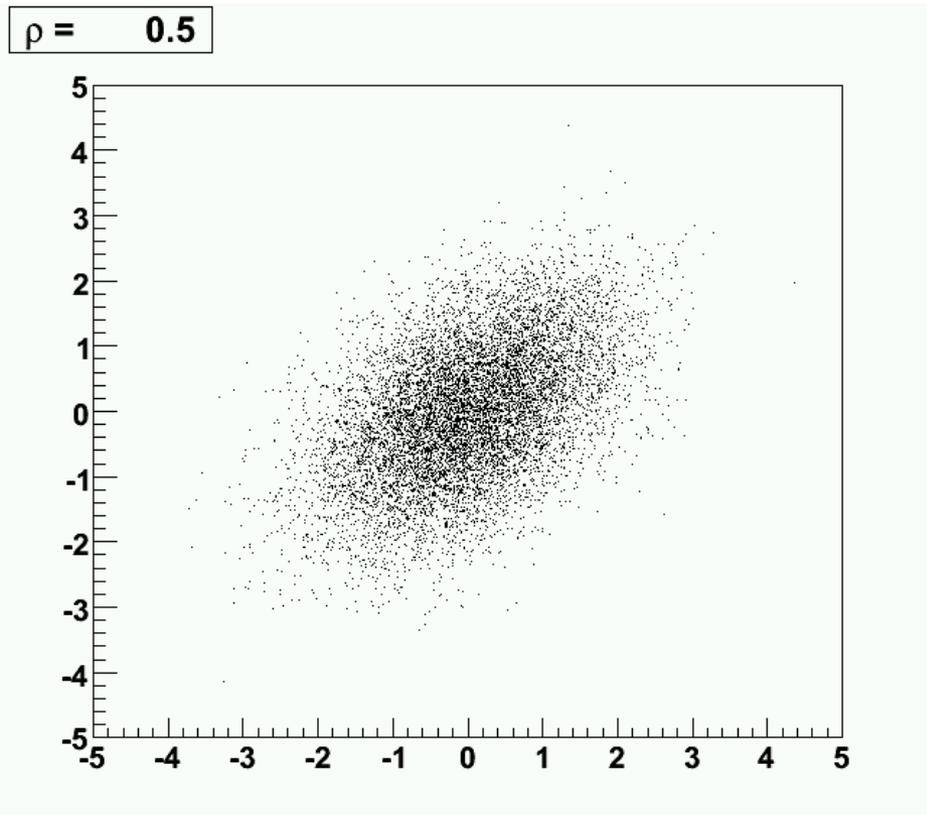


# Mittelwert, Median, Mode

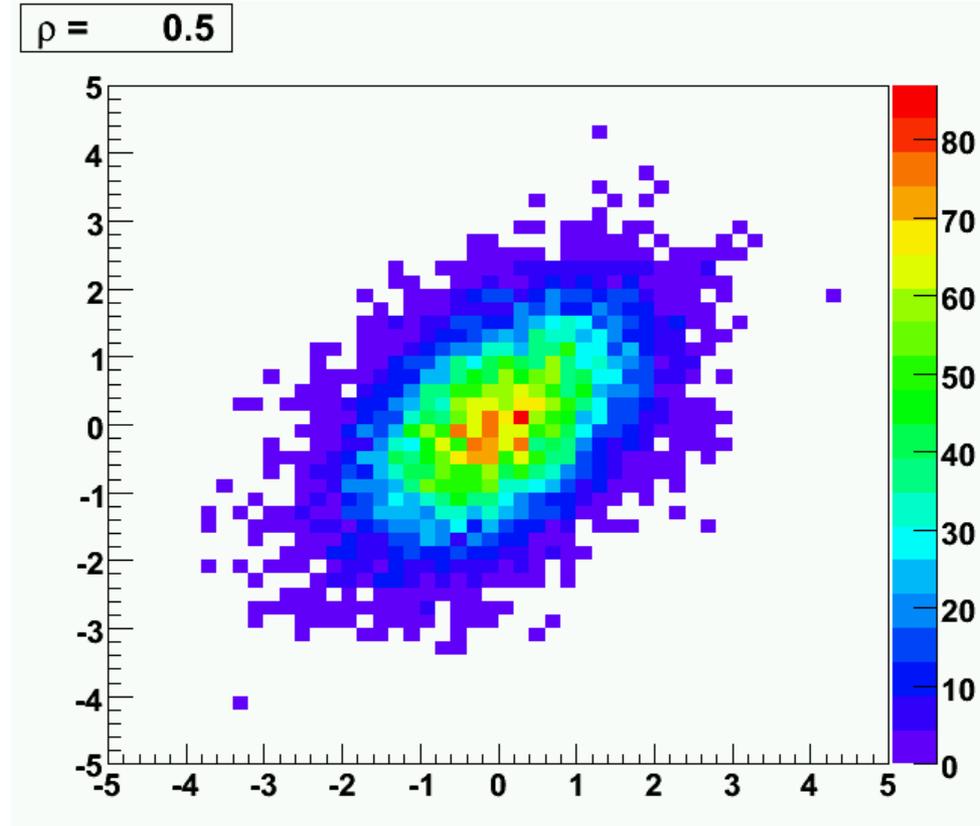


# 2 Variablen

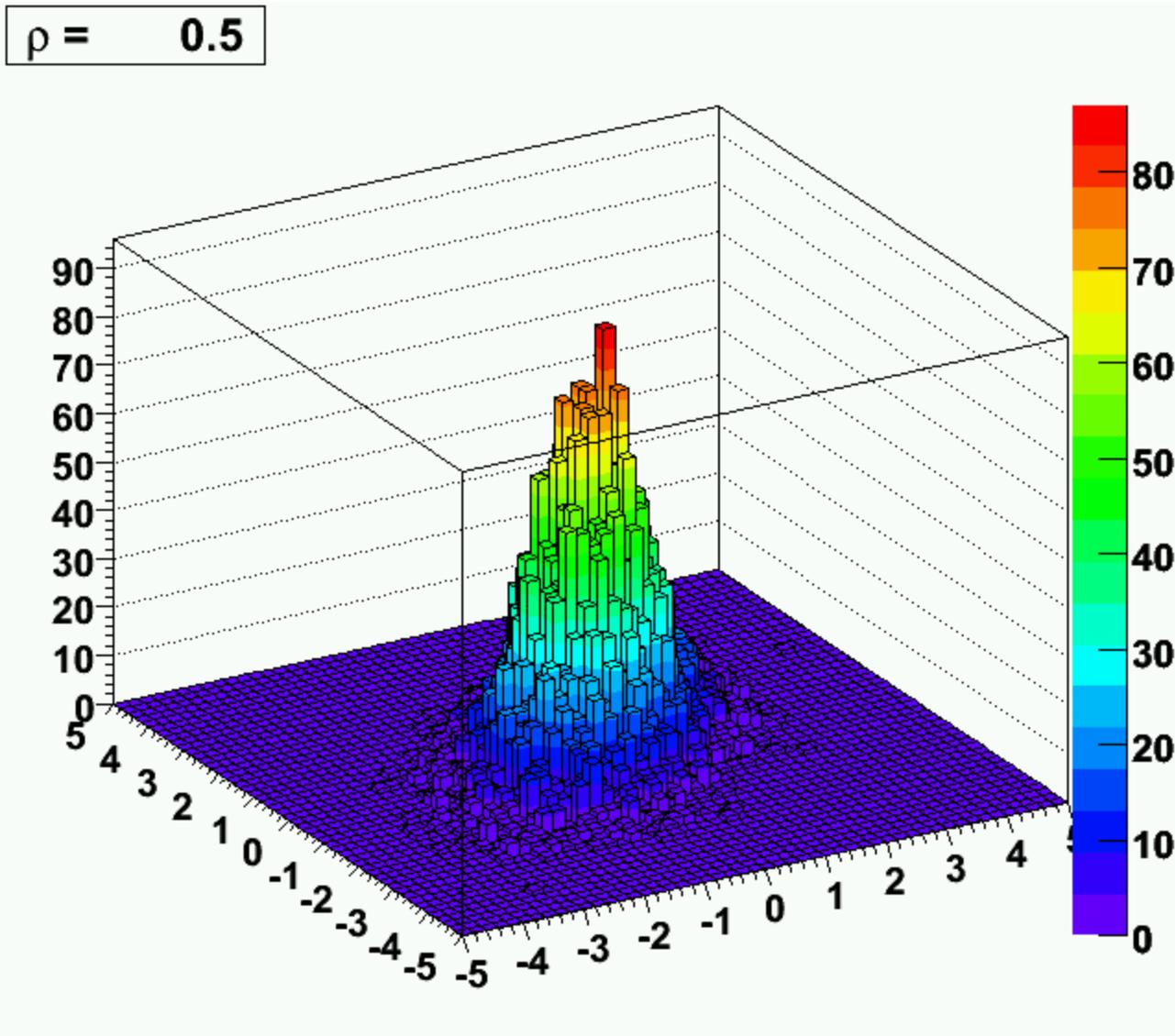
## Scatter-Plot



## Kontur-Plot

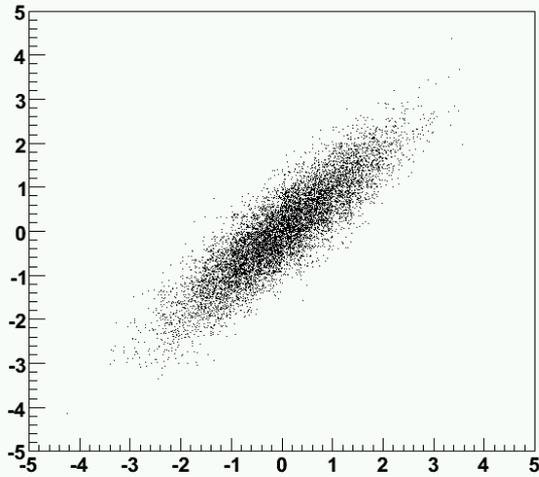


# 2 Variablen: Lego-Plot

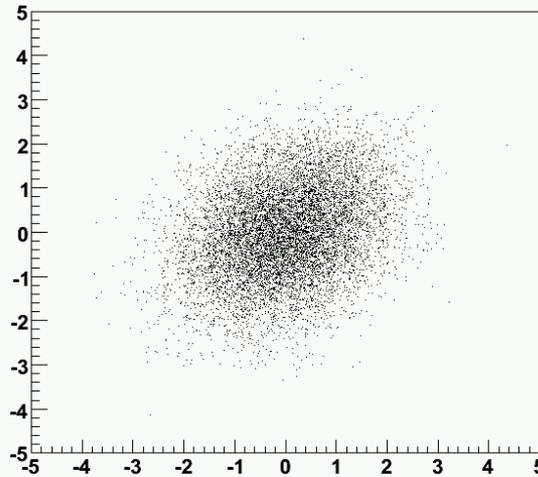


# 2 Variablen: unterschiedliche Korrelationen

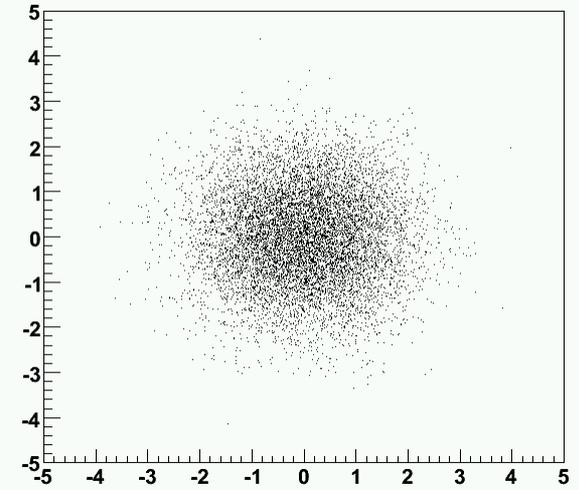
$\rho = 0.899999976$



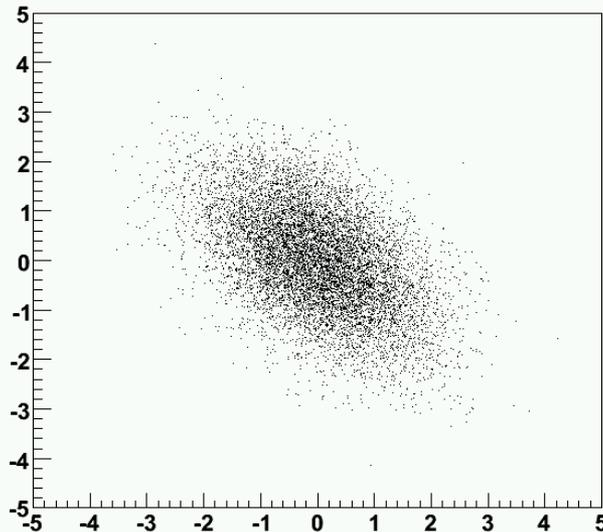
$\rho = 0.300000012$



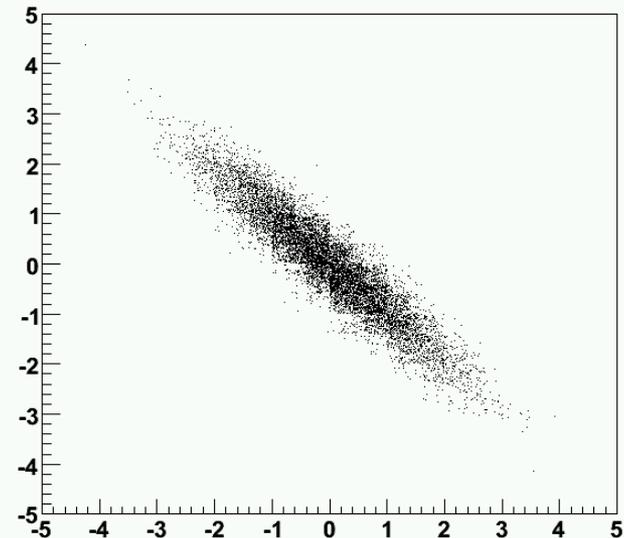
$\rho = 0$



$\rho = -0.5$

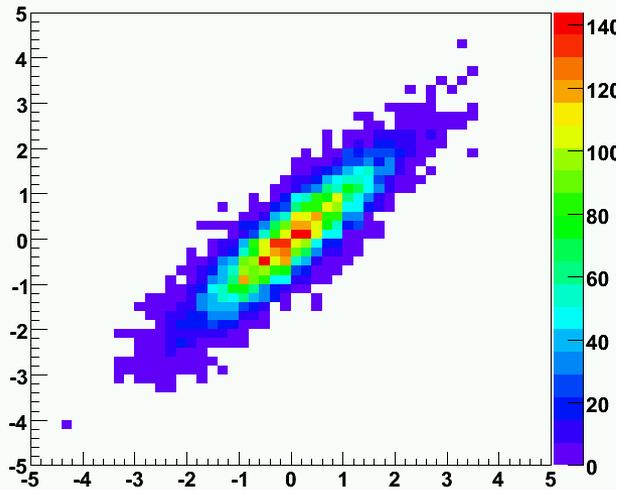


$\rho = -0.949999988$

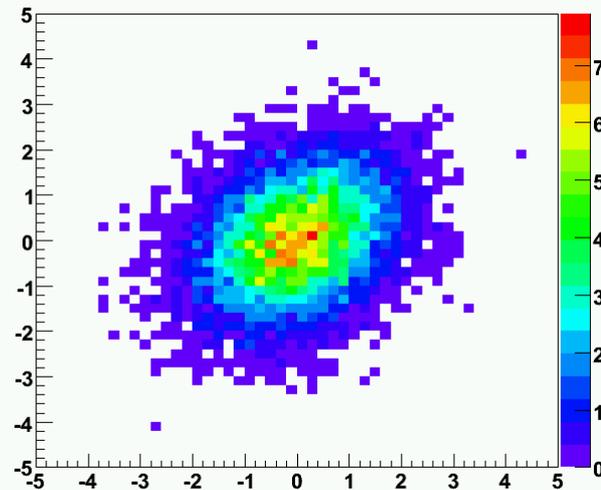


# 2 Variablen: unterschiedliche Korrelationen

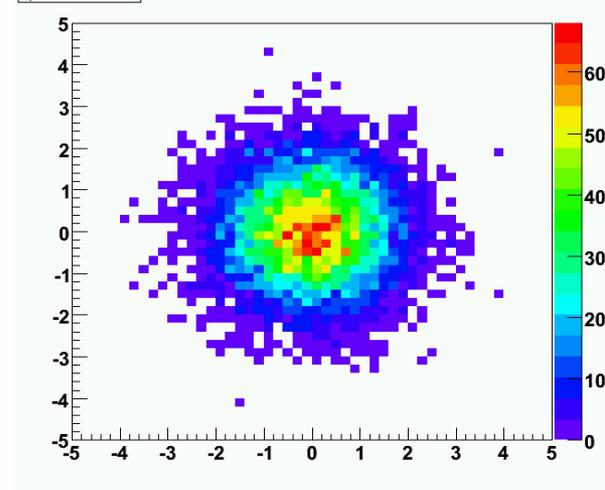
$\rho = 0.899999976$



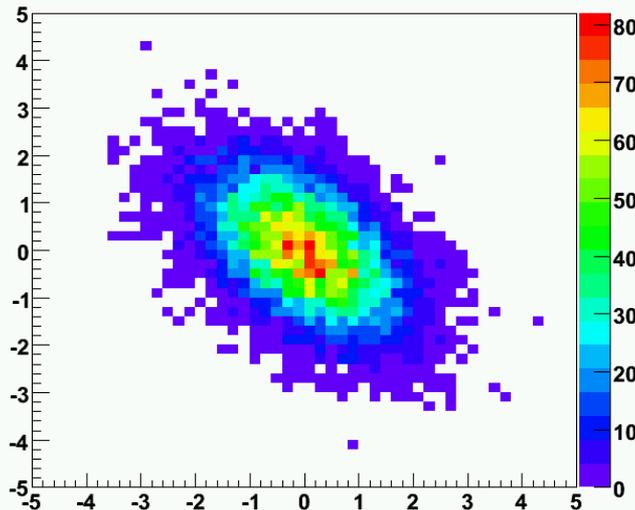
$\rho = 0.300000012$



$\rho = 0$



$\rho = -0.5$



$\rho = -0.949999988$

