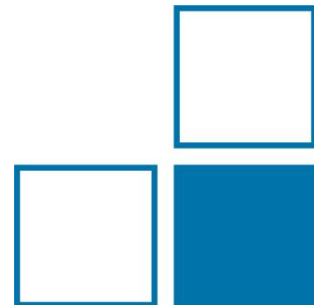


Web-basierte Durchführung von Ringvergleichen

... bei EURAMET

Thomas Spiegel, PTB



Motivation

EURAMET

Möglichkeiten und Funktionen

Offline	Online
Lange Laufzeiten	Kürzere Laufzeiten
Lokale Archivierung in Ordnern oder eMails	Datenspeicherung Online an einem Ort
Aufwändige Planung	Organisierter Ablauf
	Weitere QM Dokumentation Bilder vom Aufbau Textnachrichten (Chat)
	Jederzeit aktueller Status einsehbar für TN, Koordinator & EURAMET

- European Association of National Metrology Institutes
Europäische Vereinigung nationaler Metrologieinstitute.
- Gründung 1987 als EUROMET mit Start am 01. Januar 1988
- Als Nachfolger wurde EURAMET e.V. am 01. Juli 2007 gegründet
- Koordination der metrologischen Aktivitäten
Durch die Koordinierung und den Austausch messtechnischer Aktivitäten und Dienstleistungen soll höhere Effizienz erreicht werden.

- Übersicht aller bzw. meiner Vergleiche

TC	Comparison Name	Team Members	Project Progress	#Edit
AUV #33	CCAUV.V-K5 Created 2017-05-16 Pilot Thomas Bruns		<div><div></div></div> 75% Complete (Working) Meas. Document	View / Edit Delete ...
F #40	EURAMET 1452 20, 50, 250 L prover tank international comparison Created 2018-06-26 Pilot Konstantin Popov		<div><div></div></div> 75% Complete (Working) Meas. Document	View / Edit Delete ...
EM #14	EURAMET EM-S42 Created 2016-11-24 Pilot Alf-Peter Elg		<div><div></div></div> 75% Complete (Working) Meas. Document	View / Edit KCDB Delete ...
EM #44	EURAMET EM.K5 Created 2018-10-23 Pilot Helko van den Brom		<div><div></div></div> 75% Complete (Working) Meas. Document	View / Edit Delete ...
MC	EURAMET		<div><div></div></div>	View / Edit Delete ...

■ Kalenderbasierte Organisation des Ablaufes



■ Organisation aller notwendigen Dokumente

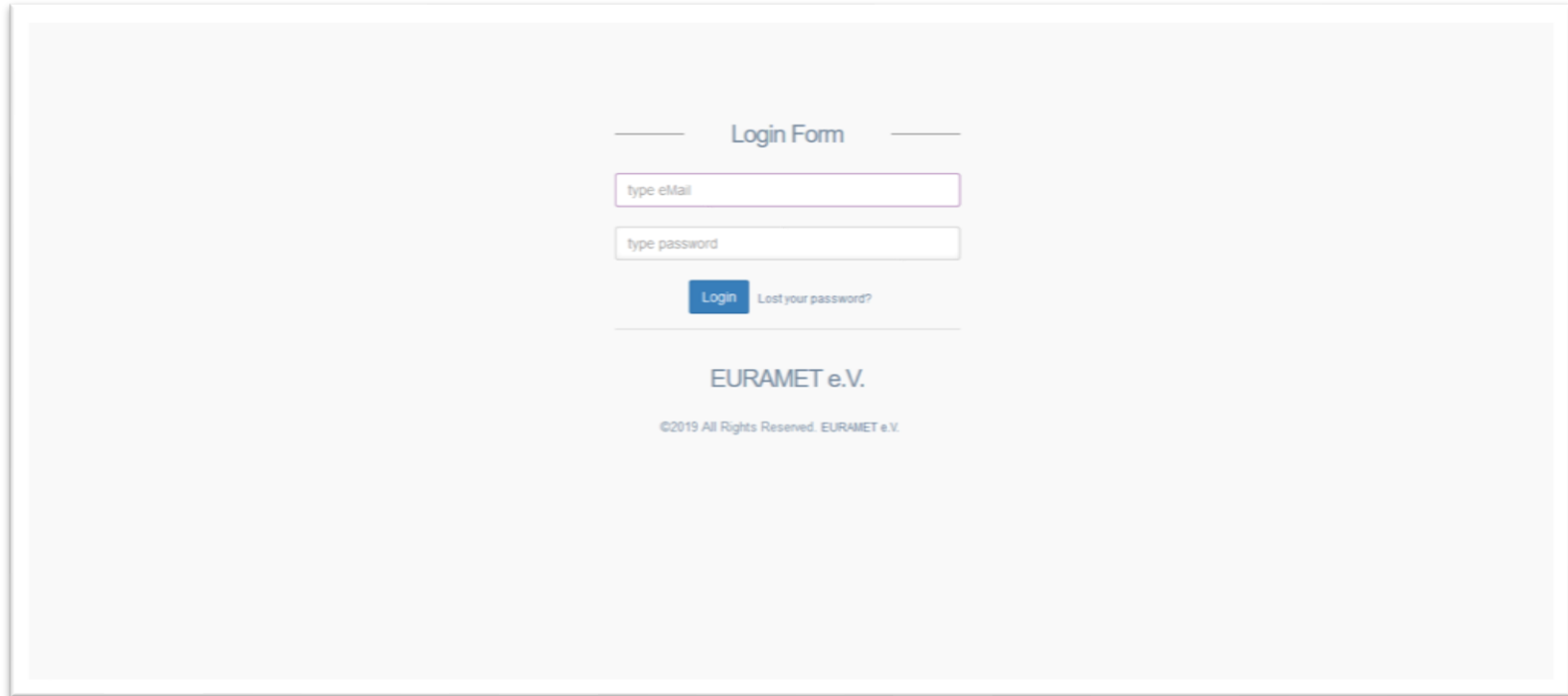
Choose a Document

Explanation of table-columns :
Document Templates : Official Templates from EURAMET as Word-file
automatically gen. Documents : Some Templates are automatically generated, based on the data from this database
Uploaded Documents : Documents which are created and uploaded by pilot/support
! Note : A new upload replace the old one !

1. Overview	#	Name	Document Templates	automatically gen. Documents	Uploaded Documents (by pilot/support)
2. Templates	2.1.	Protocol	download	PDF ; Doc	pdf
3. Data analysis	2.2.	Invitation to participat		PDF	
	2.3.	Confirmation of participation + letter of commitment	download	PDF ; Doc	
	2.4.	Time scheduling			
	2.5.	Receive and send forms		PDF	
	2.6.	Audit pack: list of documents; proforma invoice; inventory; packing instructions	download	PDF	
	2.7.	Report for raw data			
	2.8.	Report of participant			
	2.9.	U-Budget	download		
	2.10.	Report (A and B)	download		

Upload a document for this Comparison

- Nur für registrierte Nutzer



The screenshot displays a web-based login interface for EURAMET e.V. The form is centered on a light gray background. At the top, the text "Login Form" is flanked by horizontal lines. Below this, there are two input fields: the first is labeled "type eMail" and the second is labeled "type password". Under the password field is a blue "Login" button and a link labeled "Lost your password?". At the bottom of the form area, the text "EURAMET e.V." is displayed, followed by the copyright notice "©2019 All Rights Reserved. EURAMET e.V.".

■ Kopfdaten

Head Data

Select TC *

please choose

Select Comparison Category *

please choose

Comparison name *

.?.

Comparison name like : EM.K11 or S.35

short description *

short description like : ac-dc voltage transfer difference at low voltages

Short comment

Short comment like : Only main device is needed

Coordinator

please choose

Parallel Loops

1

1 is for standard comparison ; 2 or more are for multiple parallel loops

Comparison standard

Device *

Device like : Fluke 792A

Serial number *

Serial number like : 5443-054

Alternative device

Device like : Fluke 792A

Serial number

Serial number like : 7853-684

Measurement Handling

Enter Measurement values

☒ in an external Document (provided by the pilot) to upload this file in this Toolbox

☐ into a formular in this Toolbox

■ Teilnehmer einladen

Add a new Participant to this comparison

Participant

or

as ☒ Participant
☐ Support group member

choose Task(s) ☐ Analysis of the measurement data
☐ Characterisation and or provision of the standard(s)
☐ Preparation of the reports
☐ Preparation of the technical protocol
☐ Setting up and monitoring the timetable

Add Participant

By adding a participant, an email will be send in parallel

Please add only the main participant of an institute, deputies can be added later by the participants.

Participants of this comparison

ID	Loop Nr	Institute	Name	Contact	last login	Action
15	1	RISE RISE Research Institutes of Sweden AB Sweden (SE)	Anders Bergman Mr. Dr.	☎ +46 10 5160673 ✉ anders.bergman@rise.se ✉ hignettager@rise.se	2019-11-07 08:56:00	

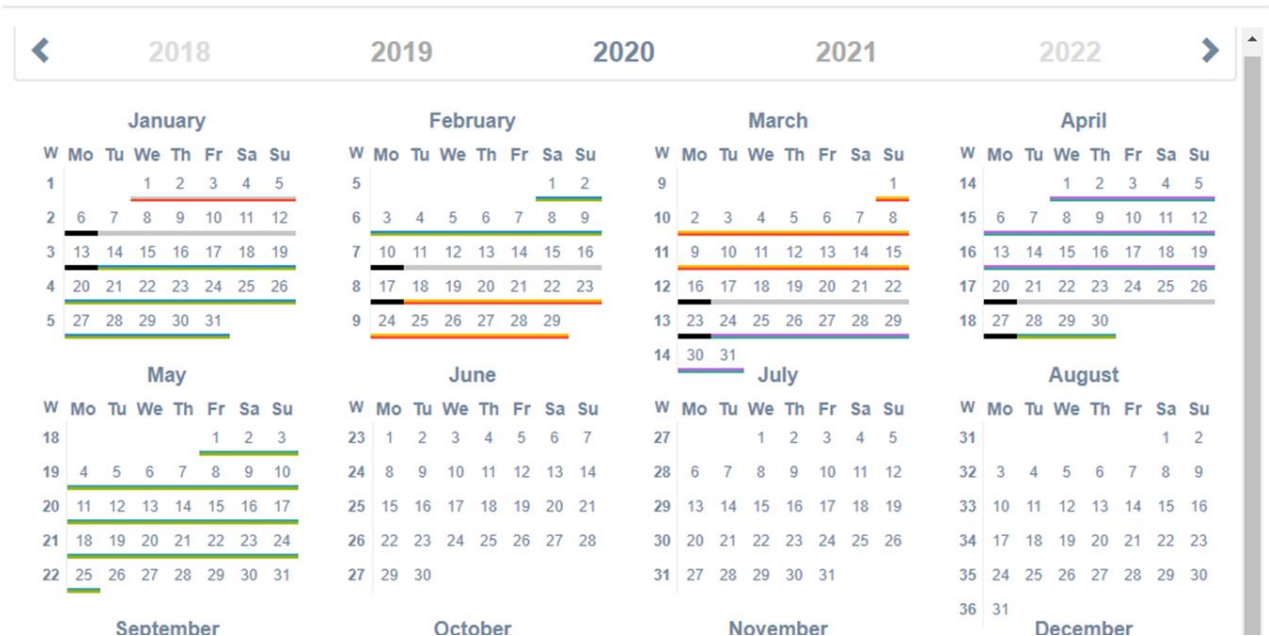
Arrangement Phase

1. Arrange all relevant things in the calendar. If you miss one participant, click [here](#)
2. Send finished Arrangement to all Participants and give them 1 week for response

Date to get latest response to agree the TimeSlots

[Click here to send](#)

Use **drag&drop to create** , **mouse-over to view** and **right-key to delete**



■ Organisation der Messergebnisse (Tabellenform)

Calendar

Main Data

Pilot/Support

Meas. Matrix

Packing List

Documents

Participants

New Measurement

Gallery

Evaluation

Your Measurement Table / Matrix

To mark fields to be measured were possible until start measurement (2016-08-31) !

Now you can see an overview.

Table : Reported values of *Depth setting standards* and their expanded Uncertainties $U(k=2)$ in μm

Serial number \ depth	900 μm	600 μm	200 μm	50 μm	20 μm	5 μm
EN19_7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SN 497	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SN499	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SN502	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Sichtbar nur für den jeweiligen Teilnehmer und Koordinator

Values for the Device ZDAS stainless steel cylindrical weight ; Sn: 1

Date of measurement : (click here for today)

Table : [Reported values of Conventional mass and their expanded Uncertainties \$U\(k=2\)\$ in g](#)

Measurement at Conventional mass

Enter just values in g without unit.

Type	m_c
Conventional mass	<input type="text"/>
U	<input type="text"/>
Own Comment :	<input type="text"/>
Pilot Comment :	<input type="text"/>

Global comment :

Tabellenform

Values for the Device RADIAM RD-22 332S ; Sn: 208 014 from VSL

file name*	File / Comment	Date	Action
<input type="button" value="Datei auswählen"/> Keine ausgewählt			

Comment*

upload by

Upload is possible until 2019-12-31.
Note : Who can see your data? Only the administrator and the pilot !

Relevant documents, which are necessary for your measurement

Documents like : Letter of Commitment , Measuring method , Uncertainty budget etc.

Upload-Area Your uploaded documents

Filename	Description	Action
<input type="button" value="Datei auswählen"/> Keine ausgewählt		
Description	<input type="text" value="Please type here a short comment"/>	
upload by	<input type="text" value="Thomas Spiegel"/>	

Upload is possible until 2019-12-31.
Note : Who can see your data? Only the administrator and the pilot !

Datei hochladen

■ Liste der Geräte Direkteingabe bzw. upload

Calendar Main Data Pilot/Support **Packing List** Documents Participants New Measurement Gallery Evaluation

You can enter the contents directly here

Click here to insert Main Device ## HighVolt SMR 10/700 (SN: 906915) ## to packing List

Click here to insert Alternative Device ## MIAS 200-12/2C (SN: 907143) ## to packing List

Quantity	Weight (kg)	Item	Value (EUR)	Action
<input type="text" value="type ne"/>	<input type="text" value="type new"/>	<input type="text" value="type new Item"/>	<input type="text" value="type new"/>	
1	0.2 kg	HV damping resistor of SMR 10/700, 250 Ohm	500 €	edit... remove
1	0.1 kg	Connecting angle of SMR 10/700	20 €	edit... remove
1	0.1 kg	Connecting part of SMR 10/700	20 €	edit... remove
1	30 kg	HV divider tube SMR 10/700, 906915	20000 €	edit... remove

Add item to Packing List

Cumulative sum :
Quantities : 36 pieces
Package weight : 124.5 kg
Total value : 71300 €
Click here to print PDF packing list

.. Or you can upload an existing list

If you have already a packing list as a document

file name

Keine ausgewählt

Uploaded packing list document

■ Versandinformationen & Adresslabel

Calendar Main Data Pilot/Support Packing List Documents New Measurement Gallery

This Comparison is working ...

Now is your actual slot ... [2019-04-29 to 2019-05-12]
Please use the Measurement-Tab to enter your Results or Document

If you finished your measurement-slot, prepare the measurement standard for shipping. Print out the packing list. Enter the following fields :

Shipped on :

Shipped by :

Tracking Number :

Your Overview...

< 2017 2018 2019 2020 2021 >

January February March April

■ Als Dokument hochgeladene Ergebnisse

CalendarMain DataPilot/SupportPacking ListDocumentsParticipantsNew MeasurementGalleryEvaluation

Download is possible if all participants submitted their measurements. Actually 2 of 9 participants submitted their measurements.

File / Comment	Name	Date	Action
1646_Measurement_Results_METAS.xlsx Not clear how to fill in the uncertainty tab	Participant 1	2019-05-09 16:21:34	%
20181122_Measurement_Results_VSL.xlsx	Participant 2	2019-05-09 16:13:58	%
Measurement_Results_Lab_Name_-_Copy.xlsx	Participant 2	2019-05-09 16:13:01	%

- Im Formular hochgeladene Ergebnisse

☒ show Uncertainties
☒ show E_n

Export-Box

Table : Reported values of *Quantity* and their expanded Uncertainties U ($k=2$) in mH

Measurement : 10 mH

Institute	date	Type	1 kHz
(Oliver Power)	03.05.2016	Quantity	10.00178
		U	0.00008
		E_n	%
PTB (Jürgen Melcher)	09.05.2016	Quantity	10.0044
		U	3.9e-04
		E_n	0.66
(Francesca Pennechi)	19.05.2016	Quantity	9.9044

- Im Formular hochgeladene Ergebnisse

Export Data for analysis

Click in Text to select them for Copy (CTRL&c) & Paste (CTRL&v) ...

MCDAT
datastructure
s-1-n d-1-n r-1-u s-1-n
dataheader
Measurement : 10 mH
NMI Timestamp Frequency df u
[] [Hz] [uV/V] [uV/V]
data
(Oliver Power) 2016-05-03T00:00:00 1 kHz 10.00178 0.00008
PTB (Jürgen Melcher) 2016-05-09T00:00:00 1 kHz 10.0044 3.9e-04
(Francesca Pennechi) 2016-05-19T00:00:00 1 kHz 9.9044 40e-5
(Markus Zeier) 2016-05-30T00:00:00 1 kHz 10.1044 0.00040
(Luca Callegaro) 2016-06-03T00:00:00 1 kHz 10.00427 2.7e-5
(Oliver Power) 2016-07-01T00:00:00 1 kHz 10.00194 0.00009

Export-Box

(k=2) in mH

	1 kHz
ntity	10.00178
	0.00008
	%
ntity	10.0044
	3.9e-04
	0.66
ntity	9.9044

- Im Formular hochgeladene Ergebnisse

Chi Square calculation

Please select the column to calculate 1 kHz Show Chi calculation

Print

Calculation :

α	0.05 (95 %)
k_α	1.96
No of values	6
weight mean (reference value) y	10.003866391724 mH
u(y)	
U(y)	
Chi-squared Observed	
Chi-squared critical value	

Wikipedia: Chi-Quadrat-Test

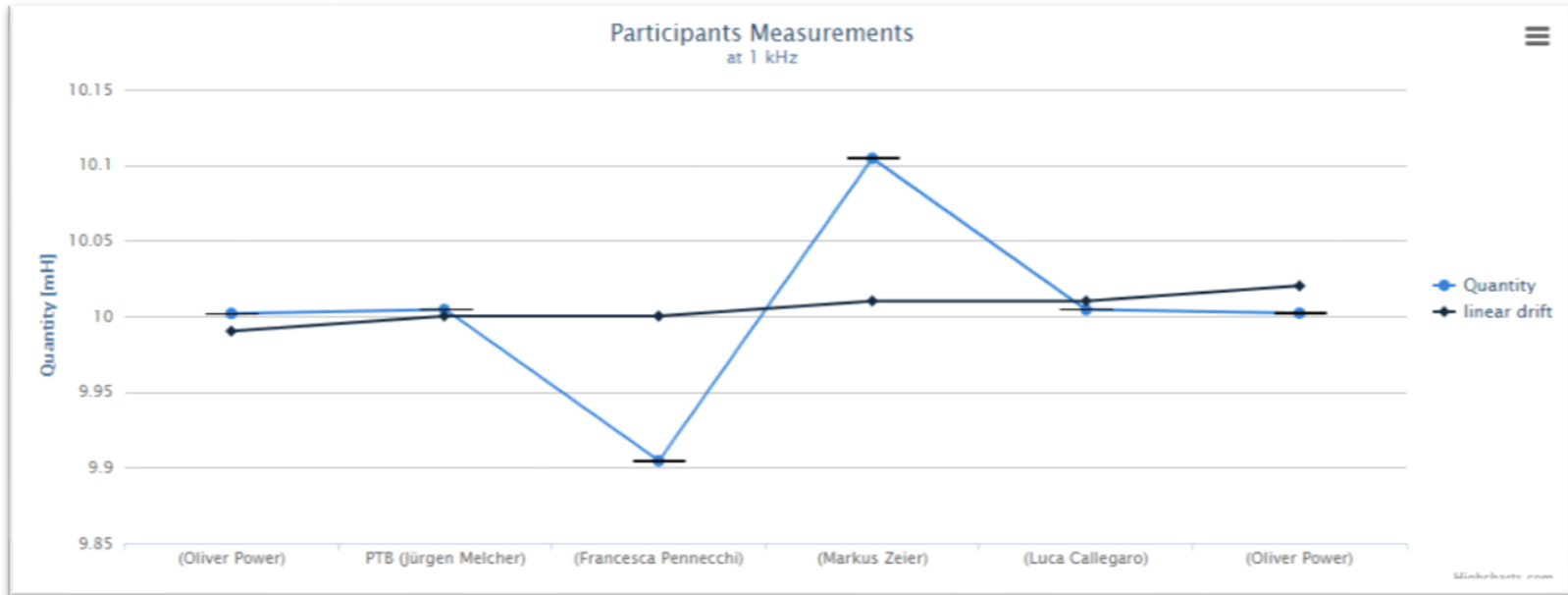
Mit **Chi-Quadrat-Test** (χ^2 -Test) bezeichnet man in der [mathematischen Statistik](#) eine Gruppe von [Hypothesentests](#) mit Chi-Quadrat-verteilter Testprüfgröße.

Man unterscheidet vor allem die folgenden Tests:

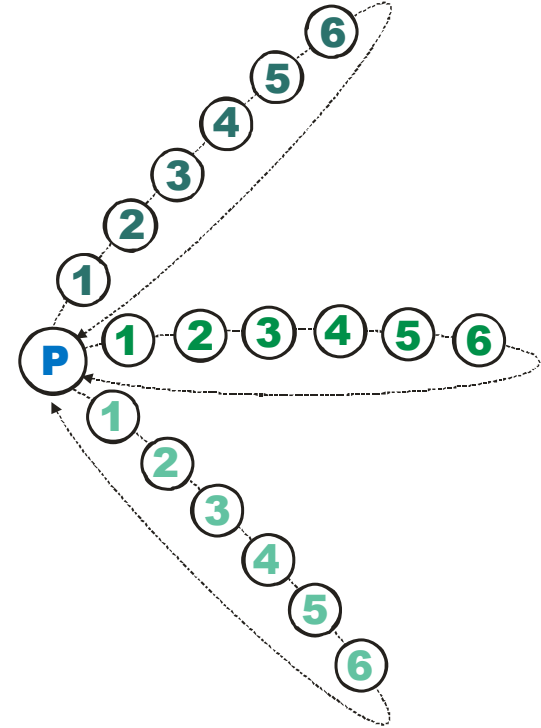
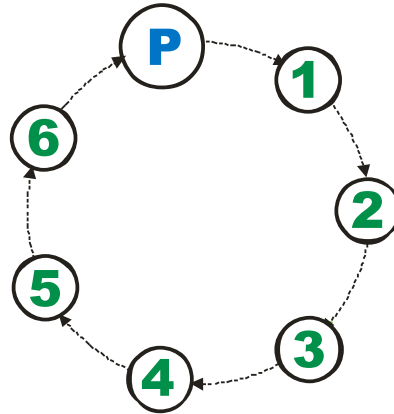
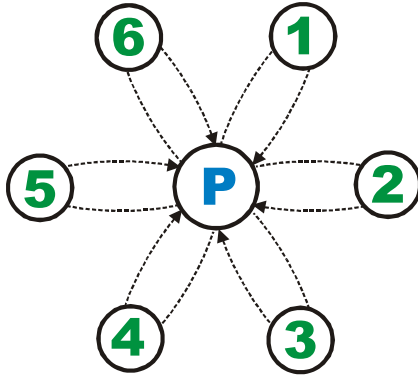
- **Verteilungstest** (auch **Anpassungstest** genannt): Hier wird geprüft, ob vorliegende Daten auf eine bestimmte Weise [verteilt](#) sind.
- **Unabhängigkeitstest**: Hier wird geprüft, ob zwei Merkmale [stochastisch unabhängig](#) sind.
- **Homogenitätstest**: Hier wird geprüft, ob zwei oder mehr Stichproben derselben Verteilung bzw. einer homogenen Grundgesamtheit entstammen.

Der Chi-Quadrat-Test und seine Teststatistik wurden erstmals 1900 von [Karl Pearson](#) beschrieben.^[1]

- Im Formular hochgeladene Ergebnisse



- Stern, Ring, Parallel *oder* „ungeordnet“





Vielen Dank für Ihr Interesse !



**Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin**

Bundesallee 100

38116 Braunschweig

Thomas Spiegel

Telefon: 0531 592-2436

E-Mail: thomas.spiegel@ptb.de

www.ptb.de



Stand: 05/19