



"Evaluation of the uncertainty of measurement results obtained in science research"

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Short description of the lecture:

Measurement result and quantitative indicators of the quality of the result.

The basis rules for the calculation of the uncertainty of measurement result by method type A

Basic rules for calculating the uncertainty of the measurement result by method type B.

The basic rules for calculating the combine uncertainties of measurement result calculated method of type A and B

Uncertainty of the indirect measurement

Uncertainty in approximations of the measurement results

Correlation of the measurement observations.

Syllabus of the lecture subjects (enlisted):

1. Measurement result and quantitative indicators of the quality of the result

- The result of measurement and the error of the result.
- Problems of using of the error in practical measurement.
- Uncertainty of the measurement result.
- Classifications of uncertainty of measurement result.
- Error and uncertainty: similarity and differences.



2. The basis rules for the calculation of the uncertainty of measurement result by method type A

- Calculation of uncertainty by the method type A (statistical methods).
- The influence of distribution of observation on the uncertainty of the result.
- Calculation of the expanded uncertainty of the measurement result.
- Student distribution.

3. Basic rules for calculating the uncertainty of the measurement result by method type B

- Calculation of uncertainty of the standard type B (not statistical methods)
- Uncertainty of the reading of the analogue and digital meters, sensors, transducers and measure unit.
- Influence of the distribution onto standard uncertainty calculated by method type B.
- Recommendations for the adoption of a priori distributions.
- Combine uncertainty.
- Measuring conditions and uncertainty of measurement result.

4. The basic rules for calculating the combine uncertainties of measurement result calculated method of type A and B

- Calculation of the combine standard uncertainty calculated by methods of type A and B.
- The effective number of degrees of freedom.
- Expanded uncertainty of a measurement result for the type A and B components.

5. Uncertainty of the indirect measurement

- The basis rules for calculating the uncertainty of the indirect measurements with a single observation of argument.



- Simplified method for calculating the combine uncertainties of the indirect measurement
- Rules for calculating uncertainty of indirect measurement with the multiple observations of input values - arguments

6. Uncertainty in approximations of measurement

- Determination parameters of approximation functions on the basis of the measurement results
- Linear approximation. Calculation of the uncertainty of the coefficients of the linear function.
- Nonlinear approximations. Calculation of the uncertainty of the coefficients of the nonlinear function.
- Calculation of the uncertainty approximation functions.

7. Correlation of the measurement observations

- Effect of auto correlated observations on uncertainty of measurement result
- Standard procedure for the detecting of correlated observations
- Indirect procedure for the detecting of correlated observations

8. A summary



TERMINY WYKLADÓW			
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