



Bachelor thesis opponent's review

Bachelor thesis: Description and Analysis of the Mathematical Model of Impedance Characteristics of Nanoparticle Covered Integrated Sensors

Author: Shangzhou Xia

Thesis supervisor: RNDr. Ilona Bláhová, Ph.D.

Thesis opponent: Ing. Lavr Vetoshkin

Rating (1 – 5)
(1 = best; 5 = worst):

1. Fulfillment of assignment requirements:	<input type="text" value="1"/>
2. Systematic solutions of individual tasks:	<input type="text" value="1"/>
3. Ability to apply knowledge and to use literature:	<input type="text" value="2"/>
4. Thesis formal and language level:	<input type="text" value="2"/>
5. Thesis readability and structuring:	<input type="text" value="1"/>
6. Thesis professional level:	<input type="text" value="2"/>
7. Conclusions and their formulation:	<input type="text" value="2"/>
8. Final mark evaluation (A, B, C, D, E, F):	<input type="text" value="B"/>
verbal:	Very good

Brief summary evaluation of the thesis (compulsory):

Despite minor mistakes in text (such as repetition on page 23, paragraph 3 and others), the overall language level of the thesis is high. Also, the author throughout the text is inconsistent in the usage of resistor symbols. For instance, figures 1.7, 1.8, 2.7, 2.10 and 2.12 use both IEC and ANSI symbols. From the definition of impedance at the first paragraph on p. 15, one can wrongly conclude that impedance represents only a resistive component in the circuit. The author afterwards outlines that impedance consists of two-part real and imaginary. However, he does not explicitly explain the meaning of the imaginary part.

Furthermore, the second equation on the same page in the definition of the impedance has minus instead of plus. In authors defense, one can easily mistype a character, yet this is quite misleading. The author well-described problems encountered using free software. Especially, peculiar changes that should be made before importing data into System Analyzer software. In regards to the comparison of the results, the author uses only Mean Absolute Error. However, it is better to use Mean Square Error as well, since those two metrics provide different information about results. Nevertheless, the comparison is adequate.



Questions:

1. Please explain the meaning of imaginary impedance sign (equation 2)?
2. What is the difference between Mean Absolute Error and Mean Square Error?
3. Can you name other possible metrics for error assessment?

Date: 31.05.19

Signature:



Notes:

- 1) The total thesis evaluation needn't be determined by the partial evaluations average.
- 2) The total evaluation (item 8) should be from the following scale:

excellent	very good	good	satisfactory	sufficient	insufficient
A	B	C	D	E	F