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PRACA DOKTORSKA

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*Badanie eyetrackingowych parametrów okoruchowych
w trakcie rozwiązywania zadań z fizyki*

Promotor: dr hab. Władysław Błasiak

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**Title: Eyetracking research of oculometric parameters
in the process of solving physics problems**

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Abstract.

The key part of the dissertation was investigation of oculometric parameters concerning eye blinks, fixations and saccades during solving graphical physics problems. The experimental groups included 199 persons, mainly beginners and experts in physics. The group of beginners consisted of the secondary school students, the university students of computer science, mathematics and the group of experts composed of the university research staff as well as post-graduate students of physics. The results of experiments show that the average fixation duration is a characteristic biometric parameter for the subjects.

The process of choosing useful physics formulas from the junior high school curriculum was investigated. The relationship between student's fixation time on displayed formulas and the frequency of recognizing them as useful was determined. The results show high correlation for the average students, while for the Physics contest winners the correlation is negligible.

The average fixation duration for dysfunctional and healthy subjects was compared. It was shown that a simple eyetracking test is indicative of learning dysfunctions and may serve as a tool improving the reliability of psychological diagnoses.