Спецсеминар для студентов 3 и 4 курсов, магистров, аспирантов «Теория управляющих систем и математические модели СБИС»

Руководители: *зав.каф., проф. Ложкин С.А., доц. Романов Д.С., доц. Шуплецов М.С., н.с. Данилов Б.Р.*

Проходит по пятницам с 17.30 до 19.00

подключение к дистанционной Zoom-конференции спецсеминара осуществляется через сайт https://вмкрасписание.рф (https:/us02web.zoom.us/j/85301709682?pwd=VkdYK2RSWXVhY3phMDNWQS92emJuZz09)

На заседании семинара 17 декабря 2021 года состоится доклад студента магистратуры Местецкого Михаила по статье **Kei Uchizawaa, Eiji Takimoto Exponential lower bounds on the size of constant-depth threshold circuits with small energy complexity // Theoretical Computer Science. 24 July 2008. Vol. 407. P 474-487**

Общая информация, темы спецсеминаров и аннотация доступны на сайте http://mk.cs.msu.ru

Аннотация доклада.

A complexity measure for threshold circuits, called the energy complexity, has been proposed to measure an amount of energy consumed during computation in the brain. Biological neurons need more energy to transmit a «spike» than not to transmit one, and hence the energy complexity of a threshold circuit is defined as the number of gates in the circuit that output «1» during computation. Since the firing activity of neurons in the brain is quite sparse, the following question arises: what Boolean functions can or cannot be computed by threshold circuits with small energy complexity. In the paper, we partially answer the question, that is, we show that there exists a trade-off among three complexity measures of threshold circuits: the energy complexity, size, and depth. The trade-off implies an exponential lower bound on the size of constant-depth threshold circuits with small energy complexity for a large class of Boolean functions.