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Simulation and analysis of the properties of linear structures in the mass distribution of nuclear reaction products by machine learning methods

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The article is devoted to the analysis of manifestations of clustering in rare multibody decays of heavy nuclei. Together with physicists from the FLNR JINR, a computer model of the fine structure was developed, which they found on the basis of experiments with the transuranium element Californium. To test the hypothesis that the structure found is a meaningful, and is not a noise artifact, it was proposed to use a deep convolution network as a binary classifier trained on a large sample of model and noise images. Preliminary results of using the developed neuroclassifier show prospects of the proposed approach.

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