Development of artificial neural network methods for complex multidimensional data analysis

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Information about the aim of my research

- main and most challenging task of this project is to improve particle identification in the neutron detector LAND using ANN technique
- develop alternative method for discrimination pulse shape parameters
- data analysis obtained during AsyEOS Experiment S394
- others
Present status of my work

- experiment S394 was developed on May 2011 at GSI was performed
  - online monitoring system

- ANN method for pulse shape analysis was developed

- developed method was compared to alternative analysis techniques

- creating computer model of the detector at Fairroot environment
Plans for the near future

- perform Monte Carlo simulations in Fairroot
- developing new method for particle identification in the neutron detector LAND using ANN technique
- Neural Network application for reaction plane determination
Benefits in my research from the collaboration with foreign laboratories

Current stay: GSI, Germany
- cooperation with members of Asy-EOS collaboration group
- direct access to resources
  - experimental data
  - local computing clusters
Benefits and possible future application of my research

- results from Asy-EOS experiment allows to understand EOS better, particularly density dependence above normal for nuclear matter, symmetry-energy term

- application of developed analysis methods in projects with similar issues

- fast method for pulse shape and time series analysis