Contribution ID: **11** Type: **not specified**

Computation of potential coefficients in quantum mechanic using artificial neural networks

Wednesday 11 January 2023 15:30 (1 hour)

A numerical method based on artificial neural networks is used to solve the inverse Schrödinger equation for a multi-parameter class of potentials. First, the finite element method was used to solve repeatedly the direct problem for different parametrizations of the chosen potential function. Then, using the attainable eigenvalues as a training set of the direct radial basis neural network a map of new eigenvalues was obtained. This relationship was later inverted and refined by training an inverse radial basis neural network, allowing the calculation of the unknown parameters and therefore estimating the potential function. Three numerical examples are presented in order to prove the effectiveness of the method. The results show that the method proposed has the advantage to use less computational resources without a significant accuracy loss.

Author: OSSANDÓN, Sebasian (IMA PUCV)

Presenter: OSSANDÓN, Sebasian (IMA PUCV)