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Applications of Genetic Algorithm to Quantum Mechanical Systems

Mehmet ŞAHİN¹, Ülfet ATAV¹, Mehmet TOMAK²

¹Dept. of Physics, Faculty of Sciences and Arts, Selçuk University,
Kampus 42031 Konya, TURKEY
e-mail: sahinm@selcuk.edu.tr

²Dept. of Physics, Middle East Technical University,
İnönü Bulvarı 06531 Ankara, TURKEY

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[Authors](#)



phys@tubitak.gov.tr

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Abstract: Genetic algorithm (GA) inspired by the biological world is a general search and optimization method. It was first proposed by Holland in 1975. GA has been applied to many scientific areas especially in engineering optimization problems. It is also used in solving of quantum mechanical problems. In this study, we have applied this method to different realistic quantum mechanical problems of both self-consistent and non-self-consistent type. The results obtained are compared with the results of other methods and it is seen that the GA can be a very powerful alternative to some other traditional techniques such as variational method.

Key words: genetic algorithm, quantum dot, heterojunction.

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