

Seminar on “Quantum Mechanics Converges to Classical Mechanics: The Correspondence principle”

Date: 01-01-2019

Participants: 75

Dr. Pruthul R Desai, Department of Physics, Sir P. T. Sarvajani College of Science, Surat



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Speaker
Dr. Pruthul Desai

Time
10:30 AM

Date
1st January, 2019
Tuesday

Venue
Sir P. T. Sarvajanik
College of Science,
Surat.



Sir P. T. Sarvajanik College of Science

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Public Lecture

**“Quantum Mechanics Converges to
Classical Mechanics:
The Correspondence Principle”**

Abstract

According to Bohr, the correspondence principle expresses the relation between quantum and classical theories, that in the limit of large quantum numbers, the behaviour of quantum systems tends asymptotically to that of classical mechanical systems. An outline of Bohr's derivation of energy level formula for Hydrogen atom on the basis of the correspondence principle is presented. It will be shown that the quantization of angular momentum was a corollary Bohr obtained in his derivation. Planck formulated the correspondence principle in the limit h goes to zero. Using suitable examples, it will be demonstrated that it is necessary to take the double limit as both $h \rightarrow 0$ and $n \rightarrow \infty$, subject to the constraint that their product is equal to appropriate classical action to obtain meaningful classical limits for eigenvalues of quantum mechanical observables.

Brief Report:

Once again it's Dr. Pruthul Desai with another topic of quantum mechanics, “the correspondence principle”. The story of “the correspondence principle”, Bohr's ideas and the significance of “the correspondence principle” were discussed very ardently by him in this talk. He explained, with the help of an example, how the large values of the principal quantum number in the quantum mechanical equations lead to the results, obtained in classical Physics. He also described how the idea of quantization of orbital angular momentum came to Bohr. The talk was followed by the question-answer session.