

CHAPTER OVERVIEW

21: Operators and Mathematical Background

So far, we have seen a few simple examples of how to solve the TISEq. For the general case, the mathematical formulation of quantum mechanics is built upon the concept of an operator. An operator is a function over a space of physical states onto another space of physical states. Operators do not exist exclusively in quantum mechanics, but they can also be used in classical mechanics. In [chapter 2](#), we have seen at least a couple of them, namely the Lagrangian, L , and Hamiltonian, H . In quantum mechanics, however, the concept of an operator is the basis of the complex mathematical treatment that is necessary for more complicated cases. In this chapter, we will discuss the mathematics of quantum mechanical operators, and we will recast the results for the analytical cases in light of the new framework. As we will see, this framework is even simpler than what we have seen in the previous chapter. This simplicity, however, will open the door to the “stranger” side of quantum mechanics.

[21.1: Operators in Quantum Mechanics](#)

[21.2: Eigenfunctions and Eigenvalues](#)

[21.3: Common Operators in Quantum Mechanics](#)

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