# Physics in the complex domain

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The theory of complex variables is extremely useful because it helps to explain the mathematical behavior of functions of a real variable. Complex variable theory also provides insight into the nature of physical theories. For example, it provides a simple and beautiful picture of quantization and it explains the underlying reason for the divergence of perturbation theory. By using complex-variable methods one can generalize conventional Hermitian quantum theories into the complex domain. The result is a new class of parity-time-symmetric (PT-symmetric) theories whose remarkable physical properties have been studied and verified in many recent laboratory experiments.