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The use of special functions, and in particular Airy functions, is rather common in physics. The reason may be found in the need, and even in the necessity, to express a physical phenomenon in terms of an effective and comprehensive analytical form for the whole scientific community. However, for the past twenty years, many physical problems have been resolved by computers. This trend is now becoming the norm as the importance of computers continues to grow. As a last resort, the special functions employed in physics will have to be calculated numerically, even if the analytic formulation of physics is of primary importance.

Airy functions have periodically been the subject of many review articles, but no noteworthy compilation on this subject has been published since the 1950s. In this work, we provide an exhaustive compilation of the current knowledge on the analytical properties of Airy functions, developing with care the calculus implying the Airy functions.

The book is divided into 2 parts: the first is devoted to the mathematical properties of Airy functions, whilst the second presents some applications of Airy functions to various fields of physics. The examples provided succinctly illustrate the use of Airy functions in classical and quantum physics.