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Hamilton-Jacobi Theory and Celestial Mechanics 1860-1900

During the 19th century the mathematical methods of celestial mechanics drew heavily on Hamilton-Jacobi theory. The primary ideas of course derived from William Hamilton and Carl Jacobi, although independent contributions were made by Siméon Poisson, Mikhail Ostrogradsky and Jacques Binet. While researchers from several countries worked on celestial mechanics, in the second half of the century the field came to be dominated by French figures. Looking at the writings of such major authors as Charles Delaunay, Félix Tisserand, and Henri Poincaré the paper examines some aspects of the mathematical foundations of celestial mechanics in the period from 1860 to 1900. A focus of interest is how the concept of contact transformation appeared and became established as a fundamental part of the theory.