The dawning of the *theory of equilibrium figures*: a brief historical account from the 16th through the 20th century

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The theory of equilibrium figures of self-gravitating masses plays a very fundamental role in pure and applied physics, from astrophysics to nuclear physics. The early origins of this theory date back to some astronomical studies achieved by D. and J. Fabricius, G. Galilei, T. Harriot and C. Scheiner in the 16th century about the determination of the possible experimental evidences for rotating celestial bodies. Then, hydrodynamics and geodesical studies made by I. Newton, C. Maclaurin, A.C. Clairaut, C. Huygens, G.D. Cassini, P.L.M. de Maupertuis, A.M. Legendre, T. Simpson, J.B. d'Alembert and others in 17th century, officially gave rise to the theory as a new and autonomous doctrine's field of mathematical physics. Later, among others, C.G.J. Jacobi, B. Riemann, J. Liouville, P.L. Tchebychev, P.L. Dirichlet, R. Dedekind, B. Riemann, A.M. Lyapunov, H.J. Poincaré and É. Cartan, gave notable formal contributions to the theory, equipping it with an even more extended and powerful formal framework, whose paradigmatic evolution is epistemologically similar to almost every other formal model of mathematical physics, in particular with a close intertwinement between theoretical arrangement and experimental counterpart. Along the diachronical evolution of this theory, parallel applications to astronomy and astrophysics were always taken into account, with notable works achieved by E.M. Roche, W. Thompson, P.G. Tait, G.H. Darwin and J. Jeans, until up to become a central chapter of modern theoretical astrophysics, nuclear physics and mathematical physics.

Main References

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