

1035-01-334

Niccoló Guicciardini* (niccolo.guicciardini@fastwebnet.it), via Polibio, 5, 20144 Milano, Italy. *The early history of $F = ma$: approaches to central force motion at the beginning of the eighteenth century.*

It is generally held that Newton's approach to mathematized natural philosophy was geometrical and that Continentals should be credited for the algebraization of dynamics. I consider a group of manuscripts concerning the application of fluxions to central force motion that Newton wrote in the early 1690s. It will be apparent that Newton wrote the second "axiom or law of motion", $F = ma$, in calculus terms, and that he applied it, via an algorithm of his own contrivance, to the motion of a "body" acted upon by a central force. I will show that Newton communicated this formulation to his acolytes, including Abraham de Moivre and John Keill, and that Newton's formula for central force motion reached the Continent where it was received and used by Johann Bernoulli. These manuscripts and the story of their transmission teach us several lessons concerning Newton's agendas, about his communication codes, and the relationships between British and Continentals mathematicians. (Received September 03, 2007)