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Tartaglia and Galileo: On Motion and Ballistics

This talk will examine contributions of two mathematicians, Niccolò Tartaglia (1500-1557) and Galileo Galilei (1564-1642), to the science of motion and the theory of exterior ballistics. Tartaglia, best known for discovering how to solve cubic equations, wrote the first text on exterior ballistics, *Nova Scientia* (1537), in which he applied Euclidean reasoning and Aristotle's ideas on motion to the trajectories of cannonballs. In his own study of motion, Galileo also wrestled with Aristotelian ideas, first in his manuscript *De Motu* (1591) and much later, after a kind of personal paradigm shift, in *Two New Sciences* (1638), in which he laid the mathematical foundation for much of Newtonian mechanics and applied his new science to ballistics. In addition to looking closely at key propositions of Tartaglia and Galileo, this talk will also briefly consider their work in the broader context of applied mathematics.