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Eisso J Atzema* (atzema@math.umaine.edu), Department of Mathematics & Statistics, University of Maine, Orono, ME 04469. *An Exceedingly Beautiful Theorem: Halley's 1706 edition of Apollonius' De Sectione Rationis and his discovery of the anharmonic tangent ratio property for a parabola.* Preliminary report.

In 1828 Michel Chasles published the first complete statement as well as a proof of what is known as the anharmonic tangent property of a conic section. As Chasles pointed out, Poncelet had proved this property for the special case of a parabola in 1822. At the time, Poncelet had off-handedly noted that the same result could be found in Halley's edition of Apollonius' *De sectione rationis* (1706). Today Chasles usually receives all the credit and Halley's contribution seems to have been all but forgotten. In this talk, I will discuss the problematic nature of Poncelet's equation of his result with that of Halley's. In order to do so, I will briefly sketch Halley's proof of his 'propositio perpulchra' and then focus on its context. Specifically, I will discuss what the actual edition of *De Sectione rationis* and similar works was about and what role Halley's theorem might have played. Also, I will show how Halley's theorem relates to Newton's work on conic sections as published in Section V of Book I of the Principia and elsewhere. Particularly, I will show how Halley's approach to his theorem demonstrates an intimate familiarity with Newton's struggle regarding the role of synthetic versus analytic methods in mathematics. (Received August 31, 2006)