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**David J Pengelley\*** ([davidp@nmsu.edu](mailto:davidp@nmsu.edu)), Mathematical Sciences, New Mexico State University, Las Cruces, NM 88003. *Did Fermat inspire Euler to discover the Quadratic Reciprocity Law for prime numbers?*

The beginnings of the theory of quadratic forms run from Fermat to Gauss via Euler, Lagrange, and Legendre. By the end of the eighteenth century, Legendre provided a clear statement of a law of reciprocity between prime numbers that emerged from studying divisibility of quadratic forms by primes, and Gauss provided the first unassailable proof of this law, one of the cornerstones of number theory.

Much earlier, though, Euler had been captivated by Fermat's bold seventeenth century claims about primes representing quadratic forms, such as "Every prime of form  $8n+1$  or  $8n+3$  is the sum of a square and double another square". In fact, Euler worked during much of his life to prove Fermat's claims. We will engage first in translating parts of a 1744 paper of Euler's, to comprehend and explicate the original form of the amazing general phenomenon he had discovered already at that early time about divisibility of quadratic forms by primes. We will then compare with Euler's more mature view written in 1772, and argue whether his discovery amounts to the Quadratic Reciprocity Law or not. (Received August 01, 2006)