1154-VS-2088 **Alan Talmage*** (abt5217@psu.edu). *Simultaneous Cubic and Quadratic Diagonal Equations Over the Primes.*

The system of equations

$$u_1p_1^2 + \ldots + u_sp_s^2 = 0$$

$$v_1p_1^3 + \ldots + v_sp_s^3 = 0$$

has prime solutions $(p_1, \ldots, p_s)$ for $s \geq 13$, assuming that the system has solutions modulo each prime p. This is proved via the Hardy-Littlewood circle method, with the main ingredients in the proof being Wooley's work on the corresponding system over the integers [**?**] and results on Vinogradov's mean value theorem. Additionally, a set of sufficient conditions for the local solvability is given: If both equations are solvable modulo 2, the quadratic equation is solvable modulo 3, and at least 7 of each of u_i, v_i are not zero modulo p for each prime p, then the system has solutions modulo each prime p. (Received September 17, 2019)