1046-11-1223 **Scott Ahlgren**, **Dohoon Choi** and **Jeremy Rouse***, 1409 West Green Street, Urbana, IL 61801. *Congruences for level four cusp forms.*

We study congruences for modular forms of half-integral weight on $\Gamma_0(4)$. Suppose that $\ell \geq 5$ is prime, that K is a number field, and that v is a prime of K above ℓ. Let $\mathcal{O}_v$ denote the ring of v-integral elements of K, and suppose that $f(z) = \sum_{n=1}^{\infty} a(n)q^n \in \mathcal{O}_v[[q]]$ is a cusp form of weight $\lambda + 1/2$ on $\Gamma_0(4)$ in Kohnen's plus space. We prove that if the coefficients of f are supported on finitely many square classes modulo v and $\lambda + 1/2 < \ell(\ell + 1 + 1/2)$, then λ is even and

$$f(z) \equiv a(1) \sum_{n=1}^{\infty} n^{\lambda} q^{n^2} \pmod{v}.$$

This result is a precise analogue of a characteristic zero theorem of Vignéras. As an application, we study divisibility properties of the algebraic parts of the central critical values of modular L-functions. (Received September 15, 2008)