1057-06-13 **Dorina Hoxha*** (dhoxha@univlora.edu.al), Department of Mathematics, University of Vlora, Vlora, Albania, and **Tanush Shaska** (shaska@oakland.edu), Department of Mathematics, Oakland University, Rochester Hills, MI. *Codes over rings of size p^2 and lattices over imaginary quadratic fields.*

Let $\ell > 0$ be a square-free integer congruent to 3 mod 4 and $\mathcal{O}_K$ the ring of integers of the imaginary quadratic field $K = Q(\sqrt{-\ell})$. Codes C over rings $\mathcal{O}_K/p\mathcal{O}_K$ determine lattices $\Lambda_\ell(C)$ over K. If $p \nmid \ell$ then the ring $\mathbb{R} := \mathcal{O}_K/p\mathcal{O}_K$ is isomorphic to $\mathbb{F}_{p^2}$ or $\mathbb{F}_p \times \mathbb{F}_p$. Given a code C over $\mathbb{R}$, theta functions on the corresponding lattices are defined. These theta series $\theta_{\Lambda_\ell(C)}$ can be written in terms of the complete weight enumerator of C. In previous work of the third author it is shown that for any two $\ell < \ell'$ the first $\frac{\ell+1}{4}$ terms of their corresponding theta functions are the same. Moreover, it is conjectured that for $\ell > \frac{p(n+1)(n+2)}{2}$ there is a unique complete weight enumerator corresponding to a given theta function. We present some new results in this problem. (Received October 18, 2009)