1077-11-880 **Terrence R Blackman*** (tblackman@mec.cuny.edu), c/o Department of Mathematics, Medgar Evers College, CUNY, 1638 Bedford Ave, Brooklyn, NY 11225. *On the Arithmetic and Geometry of Quaternion Algebras: a new spectral correspondence for Maass waveforms.*

Let $\mathcal{A}$ be an indefinite rational division quaternion algebra with discriminant d equal to pq where p and q are primes such that $p, q > 2$ and let $\mathcal{O}_{pq}$ be a maximal order in $\mathcal{A}$. Further, let $\mathcal{O}_{pq,p^{2r}q^{2s}}, r, s \geq 1$ be an order of index $p^{2r}q^{2s}$ in $\mathcal{O}_{pq}$ with Eichler invariant equal to negative one at p and at q . Finally, let $\mathcal{O}^1_{pq,p^{2r}q^{2s}}$ be the cocompact Fuchsian group given as the group of units of norm one in $\mathcal{O}_{pq,p^{2r}q^{2s}}$. Using the classical the Selberg trace formula, we show that the positive Laplace eigenvalues, including multiplicities, for Maass newforms on $\mathcal{O}^1_{pq,p^{2r}q^{2s}}$ coincides with the Laplace spectrum for Maass newforms defined on the Hecke congruence group $\Gamma_0(M)$ where, M, the level of the congruence group, is equal to $p^{2r+1}q^{2s+1}$, i.e., the discriminant of $\mathcal{O}_{pq,p^{2r}q^{2s}}$. (Received September 13, 2011)