1023-42-1149 **J Marshall Ash*** (`mash@math.depaul.edu`), DePaul University, Department of Mathematics, Chicago, IL 60614. *A halfspace is a multiplier on* $L^p\left(\mathbb{T}^d\right)$.

The Hilbert transform H is given by the multiplier operator $-i$ sgn (n). The behavior of this operator is equivalent to that of the multiplier operator $P = \frac{Identity+iH}{2}$ which maps a function $f \in L^p(\mathbb{T})$, $f(x) = \sum_{n=-\infty}^{\infty} \hat{f}(n) e^{2\pi inx}$ to $Pf(x) = \sum \chi_S(n) \hat{f}(n) e^{2\pi inx}$, where χ_S is the characteristic function of $\{n \in \mathbb{Z} : n \cdot 1 > 0\}$. A theorem of M. Riesz asserts that for $1 < p < \infty$, P is bounded on $L^p(\mathbb{T})$. A natural d dimensional analogue of P is multiplication by the characteristic function of a halfspace, i.e. the mapping of $\sum_{n\in\mathbb{Z}^d} \hat{f}(n) e^{2\pi in\cdot x}$ to $\sum \chi_S(n) \hat{f}(n) e^{2\pi in\cdot x}$, where χ_S is the characteristic function of $\left\{n \in \mathbb{Z}^d : n \cdot u > c\right\}$, where c is a real number and u is a unit vector in R^d. We have proved that this mapping is bounded on $L^p\left(\mathbb{T}^d\right)$. We will discuss the part of the proof which reduces the case of general c to the special case of $c = 0$. (Received September 25, 2006)