Given the complexification of an essential arrangement of affine hyperplanes in $\mathbf{R}^n$, we compute the reduced $\ell^2$-cohomology of the universal cover of a compact core of the hyperplane complement. The answer is that its $\ell^2$-cohomology vanishes in all dimensions except $n$ and that in dimension $n$ the $\ell^2$-Betti number is the number of bounded components of the real hyperplane complement in $\mathbf{R}^n$. (Received August 07, 2002)