1009-52-103 **Meir Katchaski**, **Subhash Suri** and **Yunhong Zhou*** (yunhong.zhou@hp.com), HP Labs, 1501 Page Mill Rd, Palo Alto, CA 94304. *Shape Sensitive Geometric Permutations.*

We prove that a set of n unit balls in R^d admits at most *four* distinct geometric permutations when n is sufficiently large, thus settling a long-standing conjecture in combinatorial geometry. Our results were subsequently improved by Cheong, Goaoc and Na to two if $n \geq 9$ and three otherwise.

The constant bound for unit balls significantly improves upon the $\Theta(n^{d-1})$ bound for balls of arbitrary radii. Intrigued by this large gap between the two bounds, we also prove a bound of $O(\gamma^{\log \gamma})$ on the geometric permutations of balls when the radius ratio between the largest to smallest balls is bounded by γ, and a tight bound of 2^{d-1} on the geometric permutations of n disjoint rectangular boxes in R^d. (Received August 09, 2005)