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Mikhail Belkin*, 2015 Neil Avenue, Dreese Labs 597., Columbus, OH 43210, and **Hariharan Narayanan** and **Partha Niyogi**. *Heat flow and a faster algorithm to compute the surface area of a convex body.*

We draw on the observation that the amount of heat diffusing outside of a heated body in a short period of time is proportional to its surface area, to design a simple algorithm for estimating the surface area of a convex body given by a membership oracle. Our method has a complexity of $O^*(N^4)$, where N is the dimension, compared to $O^*(N^{8.5})$ for the previous best algorithm. We show that this estimate cannot be improved given the current state-of-the-art in volume computation. (Received August 16, 2006)