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Alexander Koldobsky* (koldobsk@math.missouri.edu), Department of Mathematics,
University of Missouri-Columbia, Columbia, MO 65211, and **Chris Shane**. *Determination of
convex bodies from derivatives of section functions.*

It is known that non-symmetric convex bodies generally cannot be characterized by the volumes of hyperplane sections through one interior point. Falconer and Gardner, however, independently proved that volumes of hyperplane sections through two different interior points determine the body uniquely. We prove that if $-1 < q < n - 1$ is not an integer then the derivatives of the order q at zero of parallel section functions at one interior point characterize convex bodies in R^n . If q is an integer then one needs the derivatives at two different interior points (except for the case where $q = n - 2$, q odd), generalizing the results of Falconer and Gardner. (Received August 17, 2006)