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**Steffen Winter\***, Institut für Algebra und Geometrie, Universität Karlsruhe, Kaiserstr. 89, 76133 Karlsruhe, Germany, and **Jan Rataj**, Charles University, Prague, Czech Rep. *On volume and surface area of parallel sets.*

We show that if  $A$  is a bounded subset of  $\mathbb{R}^d$  and  $r > 0$  then the set of all points with distance  $r$  from  $A$  is  $(d - 1)$ -rectifiable. This observation allows to improve some known results on volume and boundary surface area of the  $r$ -parallel sets. We also study the asymptotic behaviour of both measures as  $r \rightarrow 0$  and show that there is a close relation between the Minkowski content and the corresponding rescaled limit of the boundary surface area. This also suggest a characterization of Minkowski measurability in higher dimensions extending results of Lapidus and Pomerance on the real line. Some applications to random sets, in particular the Wiener sausage, and to self-similar fractal sets are discussed. (Received September 14, 2009)