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The Minkowski multidimensional problem, by Aleksey Vasil'yevich Pogorelov, translated by V. Oliker, with an introductory comment by L. Nirenberg, Wiley, New York, Toronto, London, Sydney, 1978, v + 106 pp., $13.75.

The book under review is, to the reviewer's knowledge, the first exposition in English of an important topic in geometry since Busemann's text *Convex surfaces* (Interscience, 1958). It is hoped that this review, as well as Nirenberg's *Introductory commentary* which prefaces the English translation, may help popularize this beautiful subject in the English reading mathematical community.

The Minkowski problem, in its original formulation [1],[1] deals with the determination of a closed, convex hypersurface F in euclidean n-space, in terms of a given, positive valued function $f(\xi)$ ($\xi = (\xi_1, \ldots, \xi_n)$, $\sum_i \xi_i^2 = 1$) defined on the unit hypersphere S^{n-1}, where $f(\xi)$ represents the reciprocal of the Gaussian curvature of F at the point where the outward unit normal is the vector ξ. The function f (which we call the Minkowski data) must necessarily satisfy the exactness condition expressed by the vector equation

$$\int \xi f(\xi)\, d\omega(\xi) = 0, \qquad (1)$$

the integration being meant over the sphere S^{n-1}.

This problem was solved originally by Minkowski only in the following, "weak" sense: given the Minkowski data satisfying (1), there exists a closed, convex hypersurface F, unique up to a translation, such that, for any given, closed region $G \subset S^{n-1}$ the integral

$$\int_G f(\xi)\, d\omega(\xi)$$

[1]References in square brackets are in terms of the bibliography at the end of Pogorelov's book.