

Shape Factor Extremes for Prolate Spheroids

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Abstract: Microscopic prolate spheroids in a given volume of an opaque material are considered. The extremes of the shape factor of the spheroids are studied. The profiles of the spheroids are observed on a random planar section and based on these observations we want to estimate the distribution of the extremal shape factor of the spheroids. We show that under a tail uniformity condition the Maximum domain of attraction is stable. We discuss the normalising constants (n.c.) for the extremes of the spheroid and profile shape factor. Comparing the tail behaviour of the distribution of the profile and spheroid shape factor we show the relation between the n.c. of the profile shape factor (which can be estimated) and the n.c. of the spheroid shape factor (cannot be estimated directly) which are needed for the prediction of the tail behaviour of the shape factor. The paper completes the study [?] for prolate spheroids.

Keywords: stereology of extremes; shape factor; normalising constants; tail uniformity;

AMS Subject Classification: