A Computational Analysis of the Application of Skewness and Kurtosis to Corrugated and Abraded Surfaces (*MSc Thesis Seminar*)

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ABSTRACT: The use of statistical parameters skewness and kurtosis as measures of surface roughness was investigated by computationally generating two types of surfaces: abraded surfaces consisting of surface scratches, and corrugated surfaces, consisting of hemispherical features. It was found that abraded surfaces could be well described by the skewness and kurtosis, exhibiting a large variation in these parameters over the range of surfaces sampled. The RMS roughness, RMS slope, and surface area ratio did not change significantly by comparison. A monotonic relationship was also found to exist between the skewness and kurtosis for abraded surfaces. For corrugated surfaces, the skewness and kurtosis were nearly constant for surfaces with RMS roughness values differing by a factor of 5, while the RMS roughness, RMS slope, and surface area ratio changed significantly in comparison, indicating that these surfaces are best characterized by the latter three parameters. No monotonic relationship was found to exist between skewness and kurtosis for corrugated surfaces.

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