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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 26958.29-2024

Geometrical product specifications (GPS) - Filtration - Part 29: Linear profile filters - Wavelets

产品几何技术规范(GPS) 滤波 第29部分：线性轮廓滤波器 小波

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1.Structure and drafting rules for standardization documents" Drafting. This document is part 29 of GB/T 26958 "Product Geometry Technical Specification (GPS) Filtering". GB/T 26958 has been published The following parts.

1.Overview and basic concepts;

20.Basic concepts of linear profile filters;

21.Linear profile filters Gaussian filters;

22.Linear profile filters and spline filters;

28.Profile filter end effects;

29.Linear profile filter wavelets;

30.Basic concepts of robust contour filters;

31.Robust contour filters and Gaussian regression filters;

32.Robust contour filters and spline filters;

40.Basic concepts of morphological contour filters;

41.Morphological contour filters, disk and horizontal line segment filters;

49.Morphological contour filter scale space technique;

1 Scope

GB/T 26958.29-2024 is the part of the Chinese GPS filtration series that covers wavelet

filters for linear profiles. Every surface texture measurement is a filtering operation: the raw profile contains form, waviness and roughness together, and the number reported depends entirely on how they are separated. The Gaussian filter has done that job for decades, and its weakness is that it treats the whole profile the same way, so a local feature, a scratch, a step, a machining mark, is smeared across the result. A wavelet filter localises in both position and wavelength, which is why it is increasingly used on structured and patterned surfaces where the Gaussian gives misleading numbers. The standard defines the wavelet filters for linear profiles, their properties and the basis functions used, the multiresolution decomposition and reconstruction, the treatment of the profile ends, the parameters that specify a filter and their designation, and the requirements on the implementation. For a metrology software vendor, a laboratory or a specification writer in China, this is the reference.

This document specifies biorthogonal wavelets and related concepts for contour filtering, and gives the biorthogonal wavelet with compact support. Basic terms and their relevant usage.

2 Normative references

The following documents mentioned in this document, part or all of which constitute the requirements of this document. For any referenced document with a date, only the date is indicated. For any undated referenced documents, the latest version (including all amendments) shall apply to this document. ISO 16610-

3 Terms and definitions

For the purposes of this specification, the terms and definitions defined in ISO 16610-1, ISO 16610-20, ISO 16610-22, ISO /IEC Guide 99 and the following apply. document.

3.1 motherwavelet The univariate or multivariate functions that form the basic framework of wavelet analysis, that is, expanding the signal/profile into a linear combination of wavelets.

Note. The mother wavelet usually integrates to zero and has the characteristics of spatial localization and limited bandwidth in the frequency domain. An example of a real-valued mother wavelet is shown in Figure 1.

20 Basic Concepts of Linear Profile Filters (ISO / TS16610-20.2006,IDT) ISO 16610-

22 Product Geometric Specifications (GPS) Filtering Part

22.Linear Profile Filters Spline Filters [Ge-

Note. GB /Z 26958.22-2011 Product Geometry Technical Specification (GPS) Filtering Part

22.Linear Profile Filter Spline Filter (ISO / TS16610-22.2006,IDT)