SLOVENSKI STANDARD
SIST EN ISO 16610-61:2015/oprA1:2018

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Specifikacija geometrijskih veličin izdelka (GPS) - Filtriranje - 61. del: Linearni ravni filtri - Gaussovi filtri - Dopolnilo A1 (ISO 16610-61:2015/DAM 1:2018)

Geometrical product specification (GPS) - Filtration - Part 61: Linear areal filters - Gaussian filters - Amendment 1 (ISO 16610-61:2015/DAM 1:2018)

Geometrische Produktspezifikation (GPS) - Filterung - Teil 61: Lineare Flächenfilter: Gauß-Filter - Änderung 1 (ISO 16610-61:2015/DAM 1:2018)

Spécification géométrique des produits (GPS) - Filtrage - Partie 61: Filtres surfaciques linéaires: Filtres Gaussiens - Amendement 1 (ISO 16610-61:2015/DAM 1:2018)

Ta slovenski standard je istoveten z: **EN ISO 16610-61:2015/prA1**

ICS:

17.040.20	Lastnosti površin	Properties of surfaces
17.040.40	Specifikacija geometrijskih veličin izdelka (GPS)	Geometrical Product Specification (GPS)

SIST EN ISO 16610-61:2015/oprA1:2018 **en,fr,de**

DRAFT AMENDMENT

ISO 16610-61:2015/DAM 1

ISO/TC **213** Secretariat: **BSI**

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Geometrical product specification (GPS) — Filtration —

Part 61: Linear areal filters — Gaussian filters

AMENDMENT 1

Spécification géométrique des produits (GPS) — Filtrage —

Partie 61: Filtres surfaciques linéaires : Filtres Gaussiens

AMENDEMENT 1

ICS: 17.040.20

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ISO/CEN PARALLEL PROCESSING

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Introduction

This Amendment 1 to International Standard ISO 16610-61 is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO/TR 14638). It influences chain link n of the chains of standards on surface texture.

Amendment 1 to International Standard ISO 16610-61 develops a concept of handling end effects in the case of the linear areal Gaussian filter.

Geometrical product specification (GPS) — Filtration —

Part 61:
Linear areal filters — Gaussian filters

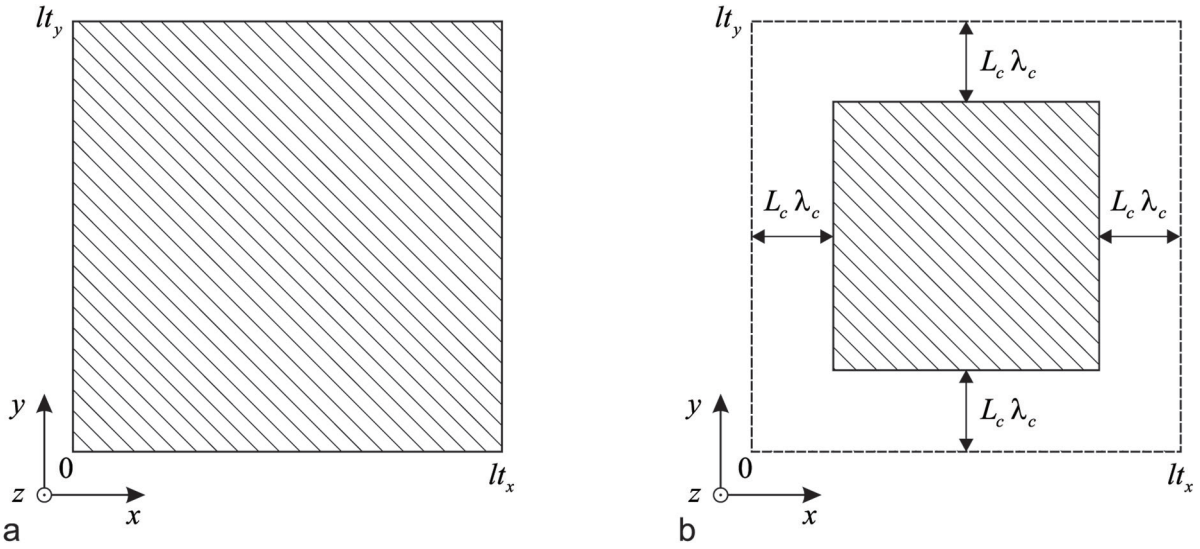
AMENDMENT 1

After clause 6.2, add a new clause 7:

7 Treatment of end effects

7.1 General

Depending on the chosen nesting indices, the filtered surface may be significantly smaller than the unfiltered surface (see Figure 8 for linear planar Gaussian filters and Figure 9 for linear cylinder Gaussian filters). If a loss of valid data points is not acceptable the moment retainment criterion with $p = 1$ shall be applied (see ISO 16610-28:2016).



a) valid data points (hatched area) before filtering **b) valid data points (hatched area) after filtering**

Key

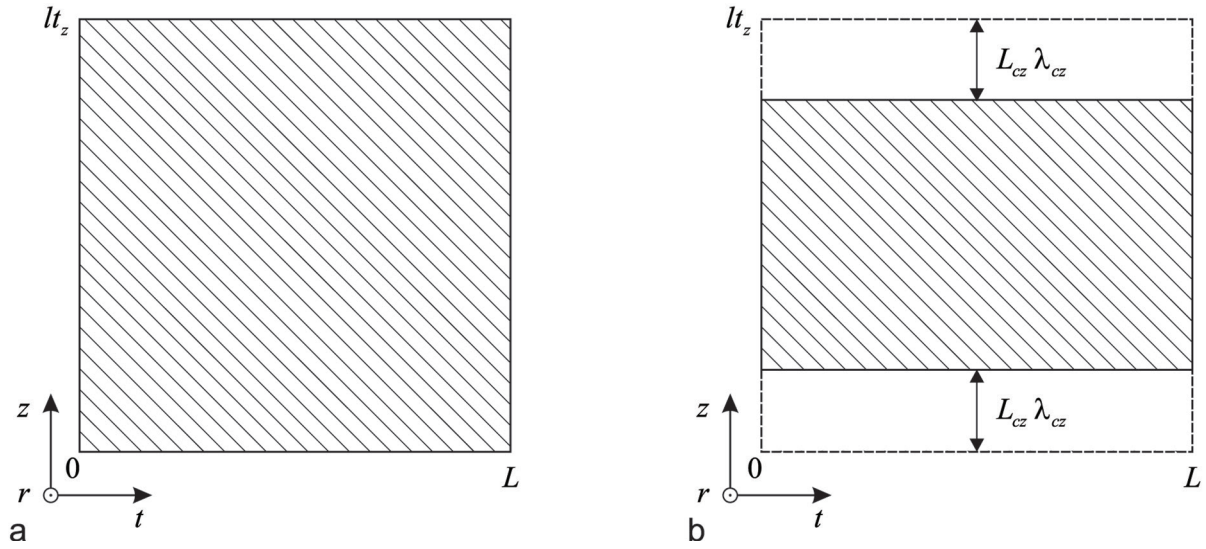
lt_x measuring length in x direction

lt_y measuring length in y direction

λ_c nesting index (cut off wavelength) of the planar Gaussian filter

L_c truncation index of the Gaussian filter

Figure 8 — Valid data points before and after filtering with linear planar Gaussian filters



a) valid data points (hatched area) before filtering

b) valid data points (hatched area) after filtering

Key

L circumferential measuring length in t direction

lt_z measuring length in z direction

λ_{cz} nesting index (cut off wavelength) in z direction of the cylinder Gaussian filter

L_{cz} truncation index of the Gaussian filter in z direction

Figure 9 — Valid data points before and after filtering with linear cylinder Gaussian filters

7.2 Generalized filter operation for linear planar Gaussian filters

For linear planar Gaussian filters, the generalized filter operation is defined by Formula (19)

$$w(x,y)=\int_{\Omega_x}\int_{\Omega_y} z(x-u,y-v)\times\left(b_{00}(x,y)+u\times b_{10}(x,y)+v\times b_{01}(x,y)\right)\times s(u|\lambda_c)\times s(v|\lambda_c)\,dvdu \qquad (19)$$

where

$\Omega_x=\left[\max\left(x-lt_x,-L_c\,\lambda_c\right),\min\left(x,L_c\,\lambda_c\right)\right]$ is the integration interval in x direction,

$\Omega_y=\left[\max\left(y-lt_y,-L_c\,\lambda_c\right),\min\left(y,L_c\,\lambda_c\right)\right]$ is the integration interval in y direction,

$b_{00}(x,y), b_{10}(x,y), b_{01}(x,y)$ shift variant correction functions.

The shift variant correction functions can be calculated by solving the matrix equation

$$\begin{pmatrix} \mu_{00}(x,y) & \mu_{10}(x,y) & \mu_{01}(x,y) \\ \mu_{10}(x,y) & \mu_{20}(x,y) & \mu_{11}(x,y) \\ \mu_{01}(x,y) & \mu_{11}(x,y) & \mu_{02}(x,y) \end{pmatrix} \begin{pmatrix} b_{00}(x,y) \\ b_{10}(x,y) \\ b_{01}(x,y) \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$$

where

$$\mu_{qr}(x,y) = \int_{\Omega_x} u^q \times s(u|\lambda_c)\,du \times \int_{\Omega_y} v^r \times s(v|\lambda_c)\,dv\,.$$

In the interior $L_c\,\lambda_c \le x \le lt_x - L_c\,\lambda_c$ and $L_c\,\lambda_c \le y \le lt_y - L_c\,\lambda_c$ the filter behaviour is given by Formula (4).

NOTE 1 The filter operation according to formula (19) is not separable.

NOTE 2 For $L_c \to \infty$, the linear planar Gaussian filter is equal to the linear planar Gaussian regression filter according to ISO 16610-71:2014 with $p = 1$).

7.3 Generalized filter operation for linear cylinder Gaussian filters

For linear cylinder Gaussian filters, the generalized filter operation is defined by Formula (20)

$$w(z,t) = \int_{\Omega_z}\int_{\Omega_t} r(z-u,t-v) \times \left(b_0(z) + u \times b_1(z)\right) \times s(v|f_c) \times s(u|\lambda_{cz})\,dv\,du \qquad (20)$$

where

$\Omega_t = \left[-L_{ct}\,L/f_c\,,L_{ct}\,L/f_c\right]$ is the integration interval in t direction,

$\Omega_z = \left[\max(z-lt_z,-L_{cz}\,\lambda_{cz}),\min(z,L_{cz}\,\lambda_{cz})\right]$ is the integration interval in z direction,

$b_0(z), b_1(z)$ shift variant correction functions.

The shift variant correction functions can be calculated by solving the matrix equation

$$\begin{pmatrix} \mu_0(z) & \mu_1(z) \\ \mu_1(z) & \mu_2(z) \end{pmatrix} \begin{pmatrix} b_0(z) \\ b_1(z) \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \end{pmatrix} \text{ where } \mu_q(z) = \int_{\Omega_z} u^q \times s(u|\lambda_{cz})\,du \times \int_{\Omega_t} s(v|f_c)\,dv\,.$$

In the interior $L_{cz}\,\lambda_{cz} \le z \le lt_z - L_{cz}\,\lambda_{cz}$ the filter behaviour is given by Formula (15) and Formula (16).

NOTE 1 The filter operation according to Formula (20) is separable.

NOTE 2 For $L_{ct} \to \infty$ and $L_{cz} \to \infty$, the linear cylinder Gaussian filter is equal to the linear cylinder Gaussian regression filter according to ISO 16610-71:2014 with $p = 1$).