Właściwości metryczne figur

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Problem

1. W Euklidesowej przestrzeni trójwymiarowej odległość między punktami (x_1, y_1, z_1) i (x_2, y_2, z_2) równa jest

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$$

2. W ogólnej Euklidesowej przestrzeni $\mathbb{R}^n$ odległość między x i y obliczana jest według wzoru

Wstęp

- Odległość euklidesowa między dwoma punktami jest równa długości odcinka łączącego te punkty.
- Na płaszczyźnie odległość między punktami (x_1, y_1) i (x_2, y_2) na mocy twierdzenia Pitagorasa wynosi

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Method

Abstract is placed in the first paragraph. It is formatted with the Abstract style. The length of the abstract should not exceed 150 words.
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Wyniki

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The purpose of this paper is to compare different approaches to the local arc problem. We consider a phantom which consists of characteristic function of two ellipses with semi-axes parallel to coordinate axes. Both ellipses locate inside the circle $\{|x| < 0.9\}$

Theorem 1 (cf. [2]) *Let $f(x)$ and $g(y)$ be two functions supported at H and B respectively. The following relations are equivalent:*

$$f(x) = \frac{4x_2}{(1+x^2)^2}\, g\Big(\frac{2x_2}{1+x^2}, \frac{1-x^2}{1+x^2}\Big),$$

$$Rg(\omega, p) = \frac{1}{\sqrt{1-p^2}}\, Mf\Big(\frac{\omega_1}{p+\omega_2}, \frac{\sqrt{1-p^2}}{|p+\omega_2|}\Big).$$

We test each algorithm on noisy data. By noisy data we mean the array G, each component of which is summing up with a uniform random number from $[-0.1, 0.1]$ times the length of $A_{k,l}$. The inversion results characterizes stability of the algorithm.

References

[1] Colin Purrington Advice on designing scientific posters http://www.swarthmore.edu/NatSci/cpurrin1/posteradvice.htm

[2] A. Denisjuk. Integral geometry on the family of semi-spheres *Fractional Calculus and Applied Analysis*, 2:42–59, 1999.

A Future Direction

We will consider the procedure of data completion for the local arc problem. We will make use of the theorem 1. Since the local arc problem is equivalent to the limited angle problem for Radon transform, consider the data completion procedure for the last problem.