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APPROXIMATE CALCULATION OF TRIPLE INTEGRALS FROM TRIGONOMETRIC FUNCTIONS OF A GENERAL FORM USING NEW INFORMATION OPERATORS

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The modern stage of development of many technical fields has prompted specialists in the field of mathematical modeling of systems and processes to construct new or improve known mathematical models. In particular, in mathematical models of digital signal and image processing, algorithms for approximate calculation of integrals from fast oscillating functions of many variables that contain new types of input information are developed [1-5]. However, the question of approximate calculation of multiple integrals from the rapidly oscillating functions of the general form with the use of various information operators is less studied. Therefore, the question of building such cubature formulas is on time.

The first step in solving such a problem is to construct cubature formulas for approximate calculation of triple integrals from trigonometric functions of the general form. In the works [6, 7], the cubature formulas of approximate calculation of multiple integrals from trigonometric functions of the general kind are constructed in the case when the information about the function is given by the values of the function on planes, lines, and an effective algorithm of numerical integration with known values of the function at points is presented. The above mentioned cubature formulas are used in their construction by new information operators (interflatation operator, interlineation operator and interpolation operator, built on the basis of interlineant) with auxiliary functions in the form of a piecewise splines.

The purpose of this study is to construct cubature formulas of approximate calculation of triple integrals from trigonometric functions of the general type, which in their construction use new information operators (interflatation operator, interlineation operator and interpolation operator, built on the basis of interlineant) with auxiliary functions in the form of a piecewise splines.

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