

## **Approximate Calculation of Triple Integrals of Rapidly Oscillating Functions using Different Types of Information about Functions**

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Modern methods of digital signal processing are characterized by new approaches to obtaining, processing and analyzing information. There is a need to build mathematical models in which information can be given not only by the values of the function at points, but also as a set of traces of the function on the planes and as a set of traces of the function on the lines. Report is dedicated to the improvement of mathematical models of digital signal processing and imaging by the example of constructing cubature formulas of approximate calculation of integrals of highly oscillatory functions of three variables. The feature of the proposed cubature formulas is using the input information about function or as a set of traces of function on planes or a set of traces of function on lines and of course as a set of values of the function in the points. The cubature formulas are correlated with a formula of the Filon type. The error estimations of the approximation of the integrals from the highly oscillating function by the cubature formulas on the class of differential functions are obtained. The main advantages of methods are high exactness of approximation, the opportunity to decrease the amount of information about function during the calculation.