



Illinois Wesleyan University
Digital Commons @ IWU

John Wesley Powell Student Research
Conference

1996, 7th Annual JWP Conference

Apr 13th, 9:00 AM - 10:30 AM

A Boundary Quadrature Formula for Multivariate Integration

Kristin Stankus
Illinois Wesleyan University

Nathan Mueggenburg
Illinois Wesleyan University

Tian-Xiao He, Faculty Advisor
Illinois Wesleyan University

Follow this and additional works at: <https://digitalcommons.iwu.edu/jwprc>

Stankus, Kristin; Mueggenburg, Nathan; and He, Faculty Advisor, Tian-Xiao, "A Boundary Quadrature Formula for Multivariate Integration" (1996). *John Wesley Powell Student Research Conference*. 21.

<https://digitalcommons.iwu.edu/jwprc/1996/posters/21>

This Event is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.

Poster Presentation 19

A BOUNDARY QUADRATURE FORMULA
FOR MULTIVARIATE INTEGRATION

Kristin Stankus, Nathan Mueggenburg, and Tian-Xiao He*
Department of Mathematics, IWU

There are many applications in which a desired integral is difficult or impossible to compute directly and furthermore all information about the function is limited to the boundary of the integral domain. In such cases we can approximate the value of the integral by using boundary quadratures.

In this project we put forward a dimensionality - reducing expansion with the highest possible algebraic accuracy and the smallest possible remainder estimation. By using this expansion, we may convert a complex integral of a high dimension to a summation of integrals of a lower dimension. We are then able to construct a boundary quadrature for each of these lower dimension integrals and thus find an approximate value for our original integral.