

1116-VR-2694 **Jason Samuels*** (jsamuels@bmcc.cuny.edu), **Aaron Wangberg** and **Brian Fisher**.

Developing Deep Student Understanding of the Partial Derivative using 3D Manipulatives.

Most students know how to calculate derivatives in single and multivariable calculus, but many cannot explain their meaning. We have designed and implemented an innovative curriculum for Calculus III in which students use plastic surfaces, measurement tools, and group activities in order to explore and uncover many of the key ideas and formulas of multivariable calculus. In this talk we will describe how students explore the partial derivative. Some initial results demonstrating student growth will be presented. This research is part of the project Raising Calculus to the Surface, funded by the National Science Foundation DUE #1246094. (Received September 22, 2015)