

# Cal Poly Department of Mathematics

## Puzzle of the Week

April 25 - 30, 2009

Let  $B$  denote a box in 3-space. Suppose  $B$  can be partitioned into a finite number of smaller boxes such that each of the smaller boxes has at least one dimension of integer length. Show that  $B$  must have at least one dimension of integer length.

[Note + Hint: There are perhaps numerous ways to approach this tricky puzzle, but let me suggest one which involves a little multi-variable calculus: consider integrating a suitable function over  $B$ ]

*Solutions should be submitted to Morgan Sherman:*

*Dept. of Mathematics, Cal Poly  
Email: sherman1 -AT- calpoly.edu  
Office: bldg 25 room 310*

*before next Friday. Those with correct and complete solutions will have their names listed in next week's email announcement. Anybody is welcome to make a submission.*